1999/2000 WATER AND SEDIMENT QUALITY CONDITIONS IN THE VICINITY OF FRESHWATER NET PEN AQUACULTURE SITES

Duncan Boyd
Mary Thorburn
Nadine Benoit
Todd Howell

Environmental Monitoring and Reporting Branch

Ontario

Ministry of the Environment

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FOREWORD

This document outlines the findings of data generated by the Ontario Ministry of the Environment in 1999 and 2000 for several cage aquaculture facilities in the North Channel and Georgian Bay. One of the main objectives of the undertaking was to assess the 1999 Interim MOE Monitoring Protocols and develop revised monitoring protocols (Recommendations for Operational Water Quality Monitoring at Cage Aquaculture Operatons, 2001) to be attached to Aquaculture Licences. Since the completion of the work in 1999 and 2000, additional information have been generated, however, this document does not include the updated information.

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1. INTRODUCTION

1.1 Background

The Manitoulin area of Lake Huron's North Channel is the site of nine active aquaculture operations, and the potential has been identified for expansion of existing sites as well as siting of additional operations. An extensive literature exists on the potential environmental impacts of aquaculture operations on marine and freshwater systems based on the historic growth of the industry in Europe, the U.S., and on the Canadian marine coasts. Nutrient pollution (eutrophication) and the corresponding potential for algal blooms, oxygen depletion, and degradation of benthic habitat in the vicinity of open cage operations with no waste collection system and limited flushing are the principal water quality issues. Other water quality issues identified in the literature include release of bacteria, pesticides, antibiotics, and non-native species, however these were not the focus of the following study.

In June 1998 a multi-agency workshop was held at which monitoring requirements were discussed and advocated by MOE to representatives from MNR, and OMAFRA. The potential for water quality impacts from open cage operations was identified as depending in part upon site-specific characteristics according to three general types of sites:

Type 1. enclosed lake like basins with limited assimilative capacity;

Type 2. Partially exposed sites having good epilimnion/metalimnion mixing but no hypolimnion mixing; bathymetrically, these are sites where the 14-16m depth contour is locally bounded.

Type 3. exposed locations where the hypolimnion is also well mixed, these are sites where the depth contour is not locally bounded

It was recommended that siting considerations and operational monitoring requirements be tailored according to the type of site. Figures 1 through 3 illustrate the general bathymetry of type 1, type 2 and type 3 sites.

During 1998 an extensive monitoring effort by MOE Northern Region (MOE/NR) was initiated at nine sites, augmented at two locations by MOE Environmental Monitoring and Reporting Branch (MOE/EMRB). MOE/NR also developed and distributed interim recommendations for self-monitoring by aquaculture operators (MOE 1999). During the spring of 1999 the Sudbury and North Bay District Offices of MOE/NR requested that MOE/EMRB undertake a follow up study (*based on the recommendations of the 1999 Interim MOE monitoring protocols*) on the effects of cage aquaculture operations on water quality in the Manitoulin Island area and Parry Sound. Ideally, this requested monitoring exercise was to lead to the estimation of site capacity and corresponding recommendations regarding the need for adjustments in production at any sites having unacceptable water quality.

A need to develop and pursue multi-year collaborative research was also proposed during 1999 by a consortium of government, industry, and academic groups which include the MOE Dorset

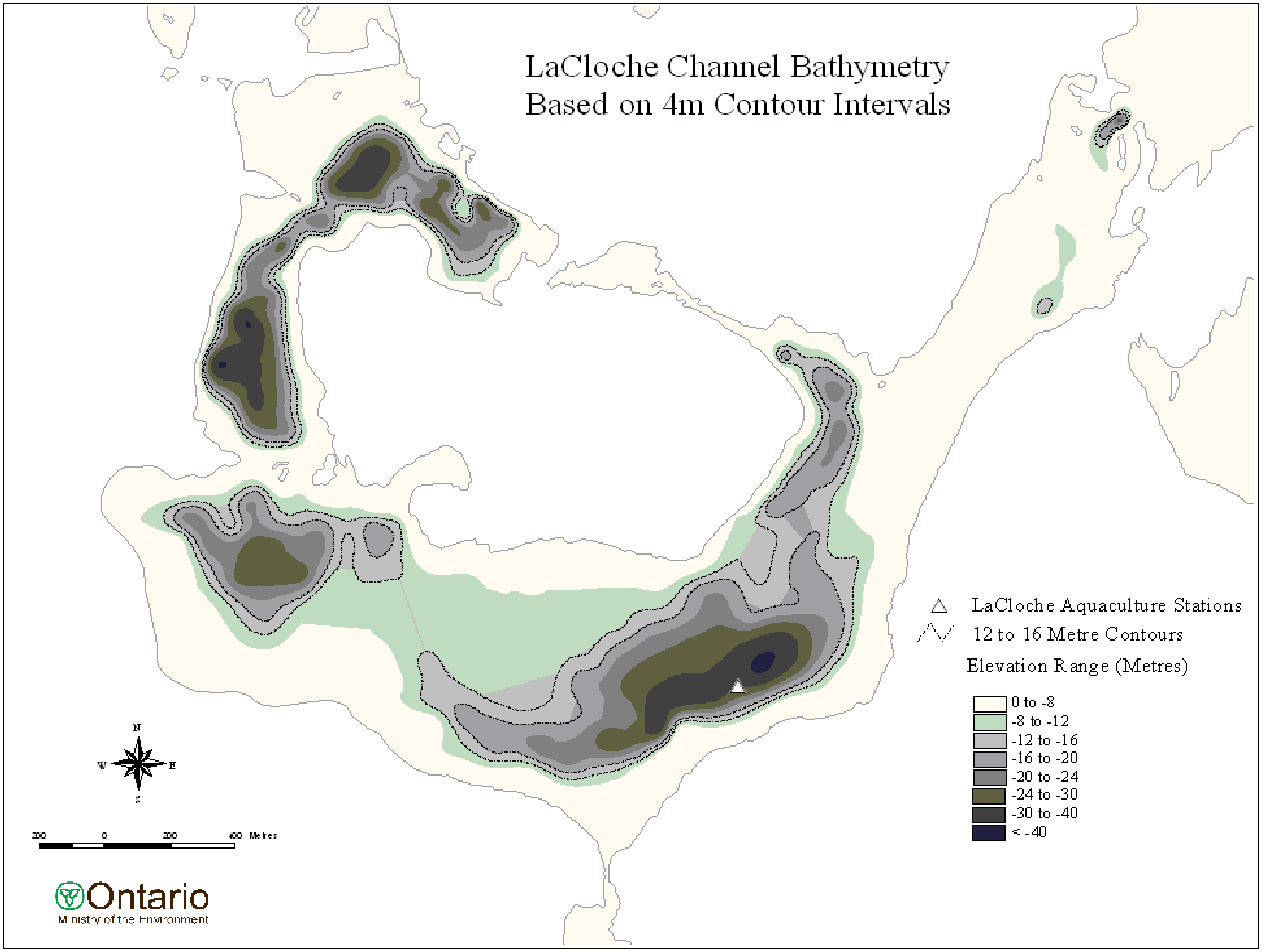

Figure 1.0: LaCloche Channel an example of a type 1 site.

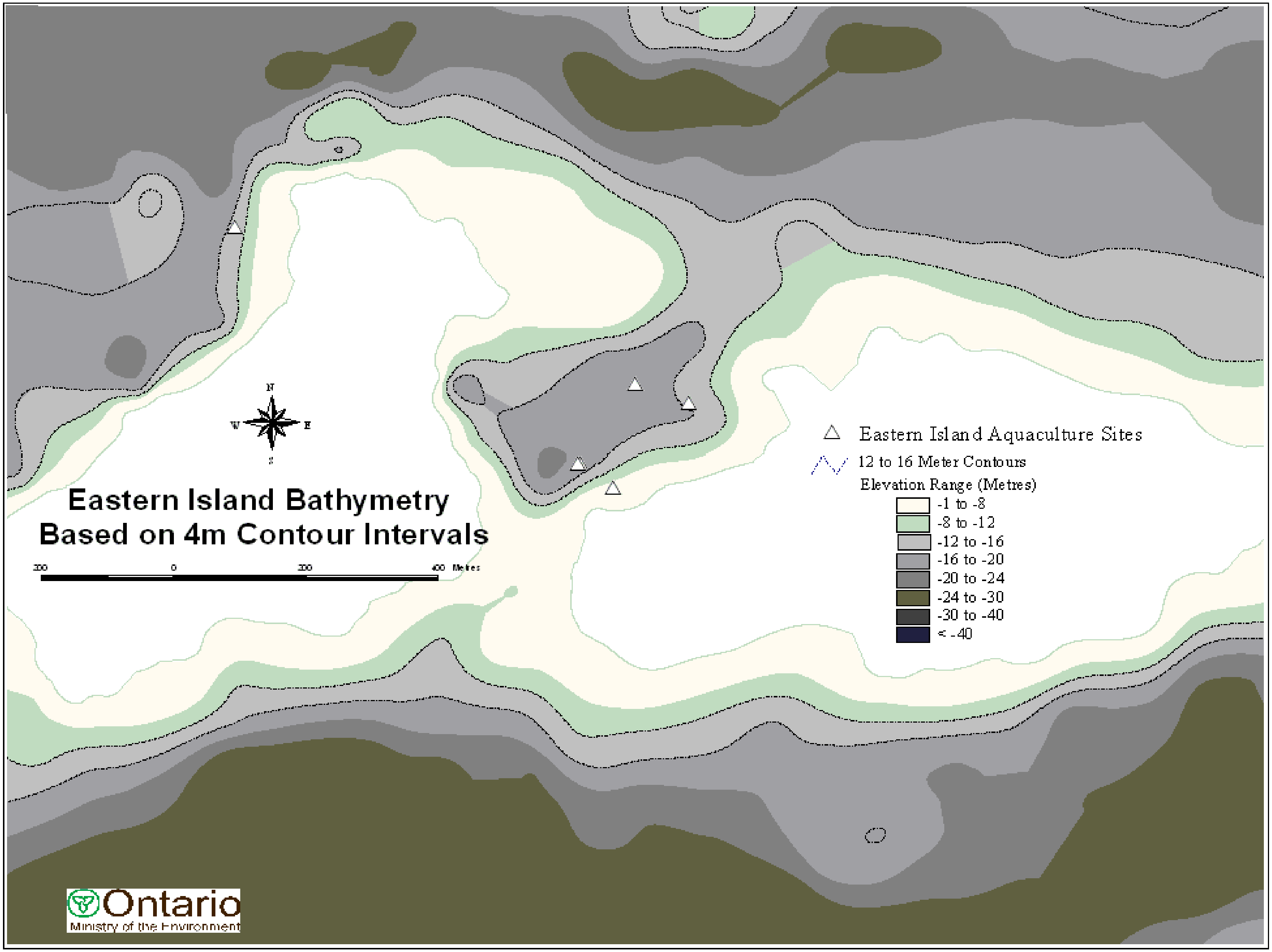

Figure 2.0: Eastern Island an example of a type 2 site.

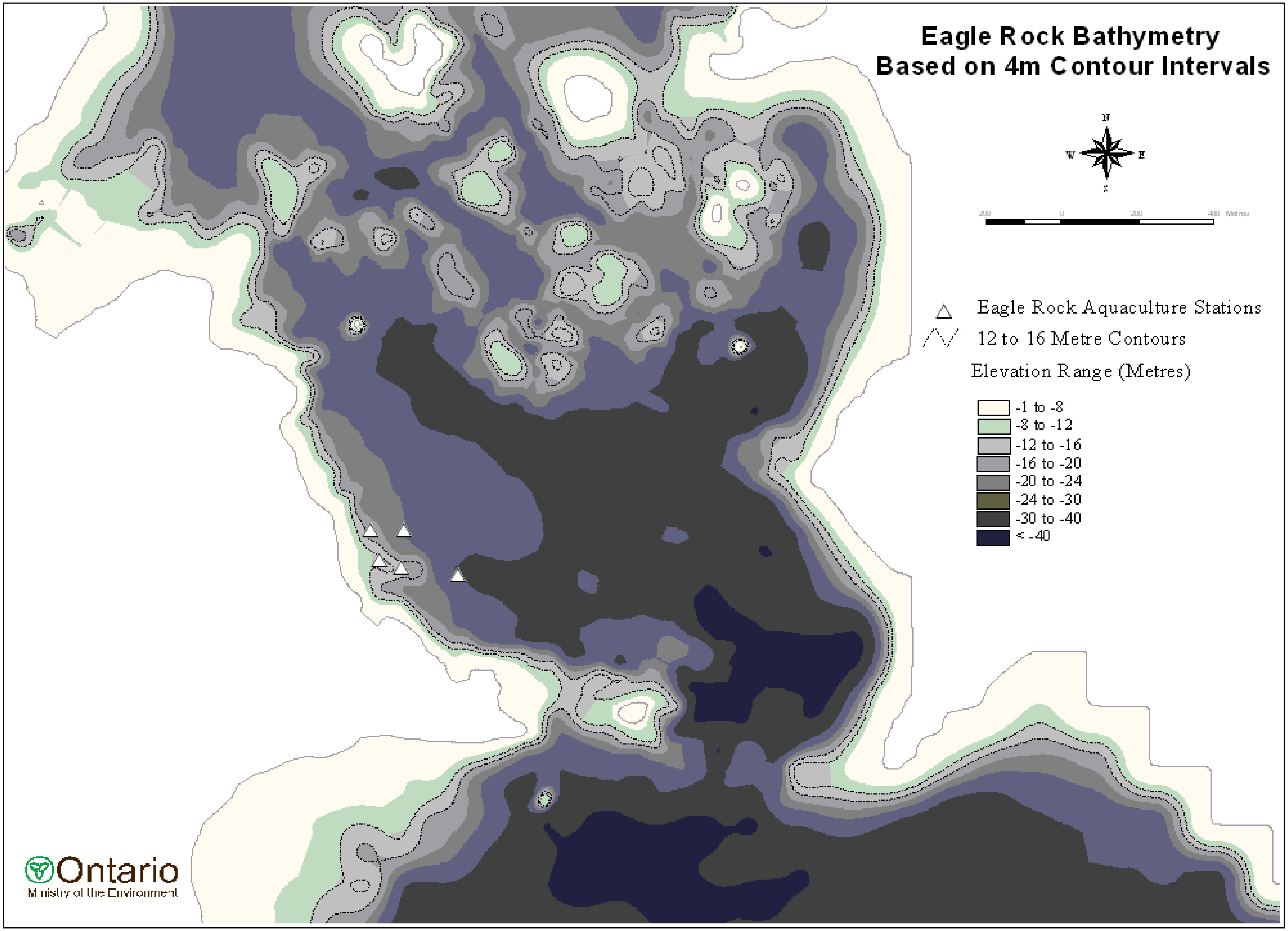

Figure 3.0: Eagle Rock an example of a type 3 site.

research facility, NWRI at Environment Canada, MNR, OMAFRA, Experimental Lakes Area, Department of Fisheries and Oceans (DFO), University of Guelph, and Ministry of Northern Mines and Development. Given the longer term timetable for results and recommendations from this more protracted research effort, a multi-party "Technical Team" comprising representatives from MOE, MNR, OMAFRA, U. of Guelph, Environment Canada, industry representatives, and cottagers (GBA) was formed during the fall of 1999 and winter of 2000 to discuss and seek scientific consensus on appropriate interim monitoring and modelling protocols and the corresponding application of the results. The goal of this Technical Team was to provide timely advice that would allow the interim management of the industry in a manner acceptable to all concerned parties while allowing the research community sufficient time to explore issues in greater detail.

The 1999 MOE water quality study described here was undertaken to provide up-to-date information upon which to base recommendations from the Technical Team to MNR concerning the interim regulation of open cage aquaculture operations. Although the 1999 work was intended to focus on the application of existing tools to provide short-term answers, it may also provide the research community with information relevant to the longer-term exploration of aquaculture impacts on the aquatic environment in Ontario.

1.2 Study Objectives

The general objectives of the 1999 MOE study were to provide the data necessary for the Technical Team to meet its short-term goals to:

- *evaluate draft MOE recommendations for monitoring requirements (as defined in the May 1999 Interim MOE Monitoring Protocols);*

- *assess and develop "trigger" limits at which operators would be required to undertake additional monitoring and/or abatement actions; and*

- *assist in the selection and development of appropriate models for relating receiving water impacts to emissions from aquaculture operations.*

These general requirements dictated a monitoring exercise capable of establishing:

(1) The seasonal range of background and "near field" water quality conditions, specifically water chemistry, in the vicinity of existing and proposed open cage aquaculture sites near Manitoulin Island and Parry Sound;

(2) The physical extent of operational zones in the vicinity of fish cage operations which do not meet Provincial Water Quality Objectives (PWQOs) for non-toxic, biodegradable substances;

(3) Whether the seven proposed monitoring stations at each aquaculture operation, as defined in the May 1999 *Interim MOE Monitoring Protocols,* were sufficient to detect and define the spatial extent of plumes from fish cages or whether

similar information could be obtained with fewer sampling locations;

(4) Whether the proposed monthly sampling frequency at each aquaculture operation, as defined in the May 1999 *Interim MOE Monitoring Protocols,* was sufficient to detect and define the temporal variability in plumes from fish cages and the corresponding receiving water impacts or whether similar information could be obtained with fewer samples;

(5) Whether the proposed range of water quality tests at each aquaculture operation, as defined in the May 1999 *Interim MOE Monitoring Protocols*, was sufficient to detect and define receiving water impacts or whether similar information could be obtained with fewer parameters.

(6) Determine the range of spring and fall background and "near field" sediment quality in the vicinity of aquaculture operations and compare with both the PSQGs and index reference sites.

The Technical Team goal pertaining to evaluation of simple near-field dispersion models was also part of the 1999 study, however these results will be reported separately (MOE, 2000).

This 1999 MOE study was part of a larger collaborative exercise with the Environment Canada, National Water Research Institute (EC/NWRI). The MOE portion of the overall work included (a) *in situ* water quality plume tracking and profiling, (b) water quality sampling, and (c) exploratory sediment quality assessment at two sites in the spring and late summer. The federal component of the work included additional water and sediment quality sampling, along with continuous current velocity and temperature profile logging. These results will be applied and reported by EC/NWRI.

2. SURVEY DESIGN AND METHODS

2.1 Study Sites and Sampling Locations

The 1999 MOE monitoring effort focused on six operational sites and one decommissioned site: Eastern Island, Bedford Harbour, LaCloche Channel a decommissioned site, Eagle Rock, Fisher Harbour, Buzwah, and Depot Harbour which is located in Parry Sound. Figure 4, shows the location of each aquaculture site and MOE's reference site with respect to one another. Appendix A, table A.1 contains station coordinates and figures A.1 to A.5 sampling station maps for each aquaculture operation.

2.2 Near-Surface Water Quality Plume Tracking

Plume tracking measurements were made at a depth of 1.5 m over a high-resolution survey grid near each of the five operational sites using:

•a Trimble DGPS for near-continuous measurements of location (± 5 m),
•an Odum survey depth sounder for bottom depth (± 0.05 m),
•an Ocean Sensors 3000 CT probe for temperature (± 0.1 ^{o} C) and conductivity (±1 uS cm^{-1}),

1999/2000 Aquaculture Study Sites

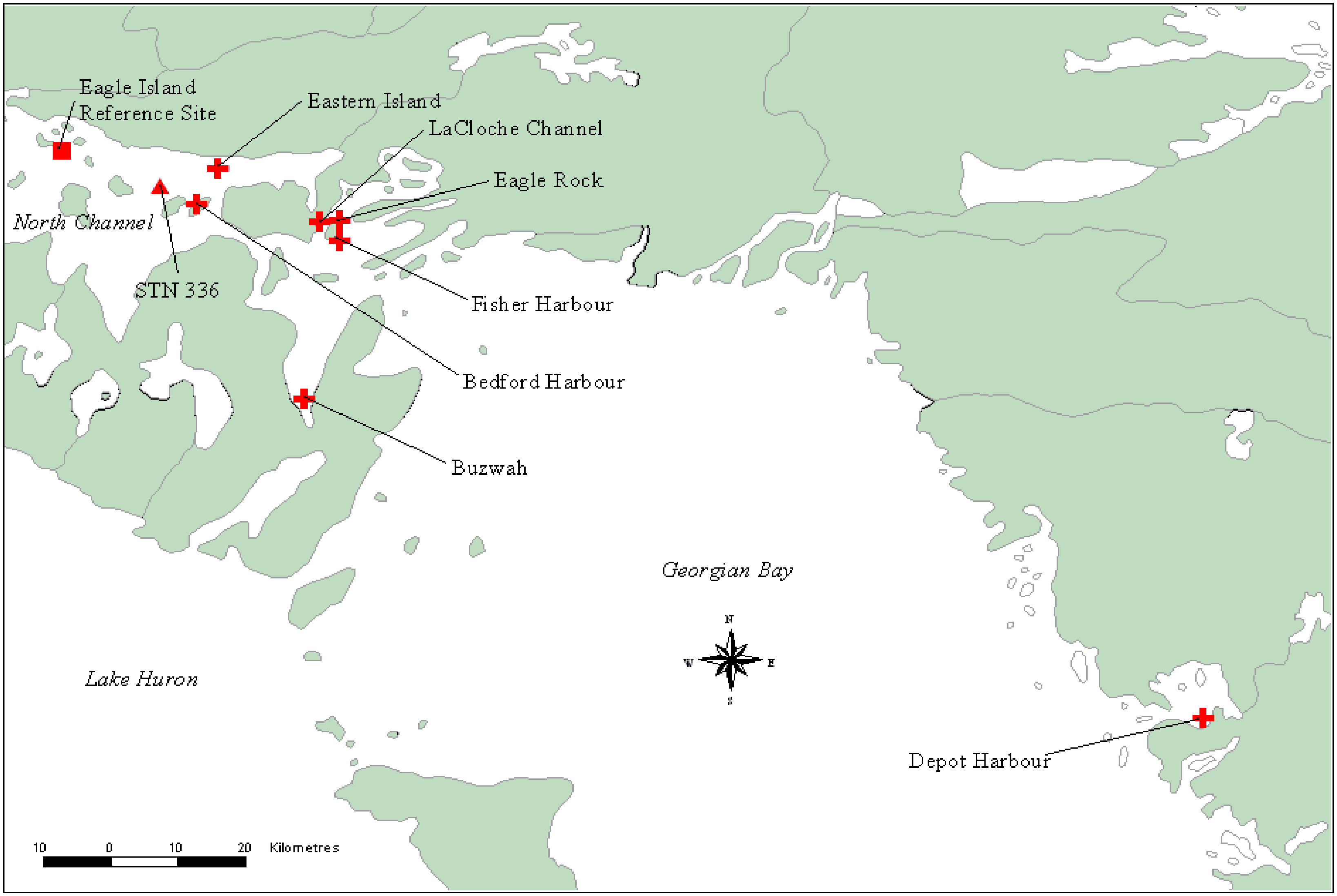

Figure 4.0: Locations of aquaculture study sites.

•a Chelsea Alphatracka transmissometer for turbidity (± 0.5 NTU),
•a Chelsea Aquatracka III (chlorophyll *a* fluorescence), and
•a Chelsea UVtracka (hydrocarbon fluorescence).

The instruments were towed at a speed of < 8 km hr^{-1} with readings logged at intervals of between 5 m and 10 m. The co-ordination, timing and logging of instrument readings were automated using a distance-based fix interval to signal data logging.

2.3 Water Quality Profiling

In general, water quality profiles were obtained at seven locations according to the sampling grid stipulated in the May 1999 *Interim MOE Monitoring Protocols* (Gale, 1999). These were at four stations approximately 15 m from the corners of cages [1], a "worst case" location at the cage perimeter (in lieu of a centre of cages location), a local "deep basin" location, and a reference site outside the area of influence. Additional profiles were collected according to site and event-specific conditions and observed surface water quality gradients. Profiling was undertaken using a Hydrolab DS3 unit with temperature, conductivity and turbidity probes and a Clark DO electrode (calibrated in air and tested under N_2).

Stations were identified based on their position in relation to the caged net pens. Each station reading was taken systematically from the east side of the net pens to the west side of the net pens. This position varied depending on the position of the pens drifting from their anchoring point. The range and bearing of each station was based on the original recorded point collected as a reference on the first sampling date.

2.4 Water Quality Sampling

Discrete water samples for analysis of major nutrients physical parameters, conductivity, and pH were collected by EMRB at two depths (1.5 m below surface and 1.5 m from the bed) at the seven locations described previously using a peristalic pump with teflon-lined polyethylene tubing for the surface sample, and a Kemmerer bottle for the deep sample. Depth integrated samples were collected at station 336 (also used as a long term monitoring index station), to remain consistent with protocols for MOE long-term water quality monitoring sites. The list of requested analyses was based on the May 1999 *Interim MOE Monitoring Protocols* and included: chlorophyll (surface samples only), nitrite/nitrate, total ammonia/ammonium, phosphate, pH, alkalinity, conductivity (COND25), suspended solids (SS), total phosphorus (TP), total Kjeldahl nitrogen (TKN), and turbidity. In addition to these tests, biochemical oxygen demand (BOD5), chemical oxygen demand (COD), and dissolved organic/inorganic carbon (DIC/DOC) were also requested in order to test their utility as indicators of oxygen consumption or nutrient enrichment. All analyses were undertaken at the MOE Rexdale laboratory using MOE standard methods.

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[1] *The 15m from cage distance was frequently unattainable due to logistical issues in anchoring the research vessel in close proximity to the cages due to anchor lines, wind conditions etc.*

2.5 Sediment Sampling

Sediment samples were collected using the box corer sampler at Bedford Harbour, Fisher Harbour and LaCloche Channel. Samples were labelled, photographed, and two homogenized subsamples from the top ~3cm were collected from the opposite corners of the sampler and submitted for nutrient, particle size, TOC, LOI and metal analysis.

A qualitative field evaluation of benthic invertebrates was made by sieving a subsample of the top ~10 cm from the sampler.

2.6 Sample Collection Periods

Four surveys were undertaken by EMRB in: late April/early May, mid July, late August/early September, and late October/early November. Additional surveys were undertaken by Northern Region (NR) in late May, late July, and late September/early October and are presented in Table 1.

Table 1: Environmental Monitoring and Reporting Branch and Northern Regions 1999 and 2000 Sampling Dates.

Site	Type of Site	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8
Eastern Island	2	2 May	1 Jun	11 Jul	19 Jul	12 Sept	27 Sept	8 Nov	Apr 18
Bedford Harbour	2	2 May	1 Jun	10 Jul	20 Jul	11 Sept	27 Sept	8 Nov	Apr 18
LaCloche Channel	1	4 May	26 May	14 Jul	19 Jul	13 Sept	6 Oct	9 Nov	Apr 19
Eagle Rock	3	4 May	25 May	12 Jul	19 Jul	16 Sept	4 Oct	9 Nov	Apr 19
Fisher Harbour	3	7 May	25 May	12 Jul	19 Jul	15 Sept	4 Oct	9 Nov	Apr 19
Buzwah	3	5 May	31 May	13 Jul	26 Jul	14 Sept	28 Sept	9 Nov	Apr 19
Depot Harbour	3	5 May	--	13 Jul	--	14 Sept	--	9 Nov	--

3. RESULTS AND DISCUSSION

3.1 Near-Surface Water Quality Plume Tracking

Parameters measured in near-surface water quality plume tracking included chlorophyll, hydrocarbons, conductivity and turbidity. Examples of surface (1.5 m) plume tracking for chlorophyll in the immediate vicinity of fish cages at the Eastern Island and Bedford Harbour sites are shown in figure 5. Changes in average chlorophyll concentrations are discerned by changing colour gradients from yellow (<0.2 ug/L) to blue (>0.4 µg L-1).

Although the array of plume monitoring equipment used was able to discern slight variations in some parameters (particularly hydrocarbons) at some locations on certain days, the variability observed lacked any particular pattern, and demonstrated the ephemeral and transient nature of near-surface plumes.

Given the transience of plume tracking, a more suitable means of documenting local effects would be to collect daily or weekly observations of water clarity using a secchi depth measurements. Secchi depth measurements is a simple and inexpensive approach that would

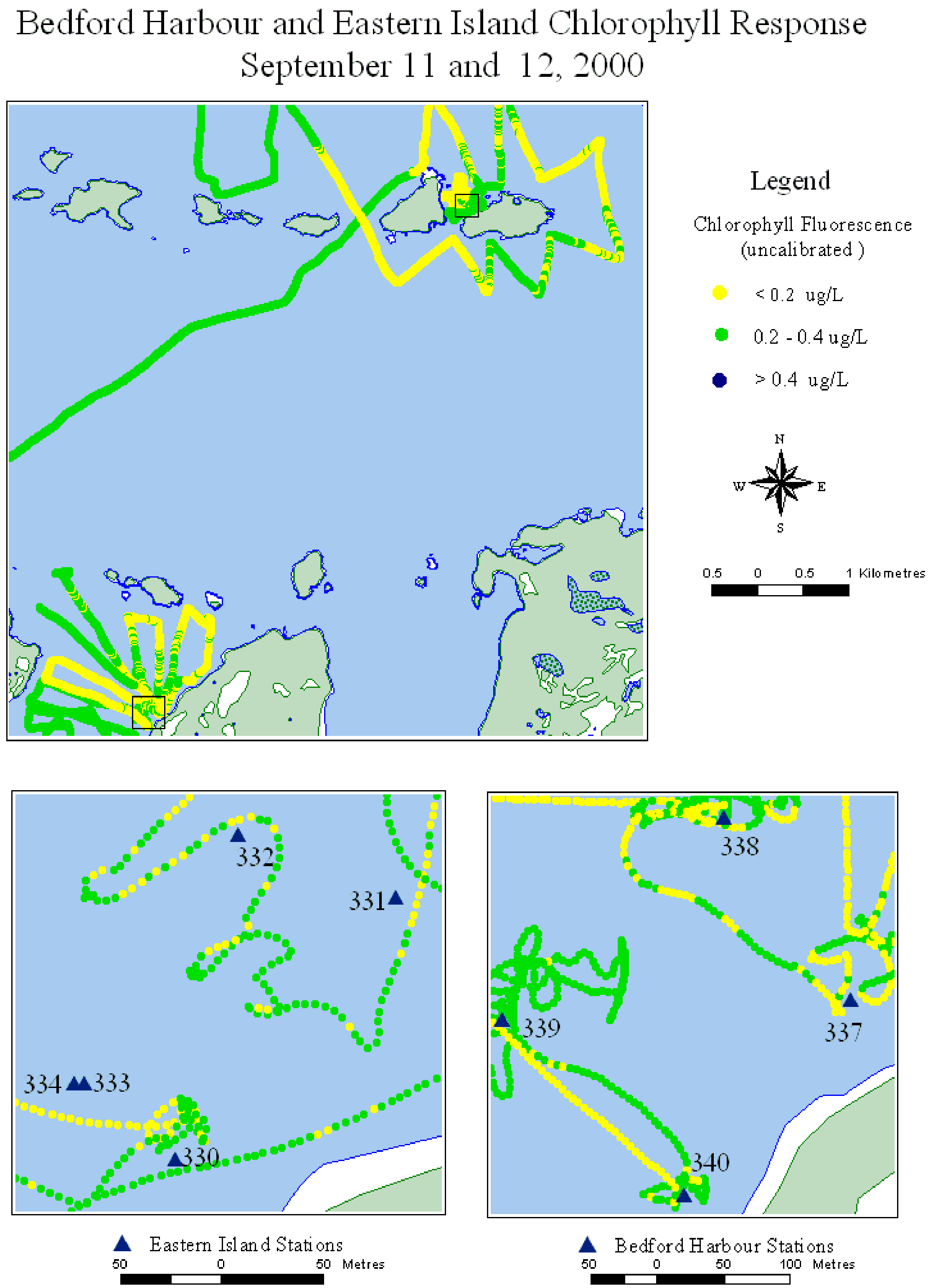


Figure 5.0: An example of raw data sampling of surface plume tracking using a Chelsea Aquatracka III, for Chlorophyll-*a* fluorescence. Values from continuous measurements are then spatially extrapolated to provide indications of changes in water quality.

yield instantaneous feedback on the relationship between feeding activity and local water quality effects such as enhanced algal productivity and would provide operators with a useful tool to sustainably optimise their practices.

3.2 Water Quality Profiling

A complete summary of water quality profiling (including temperature, dissolved oxygen, turbidity, conductivity, and pH) data is contained in appendix B, table B.1

3.2.1 Conductivity, pH, and Turbidity

In general, results for conductivity and pH profiling from all sites showed very little vertical variation and do not suggest themselves as useful indicators of water quality effects near fish cages resulting from transport of feed waste or fish faeces.

The range of turbidity measurements, even at locations in the immediate vicinity of fish cages, were generally close to the detection threshold for the instrument (approximately <1.0 NTU). Although readings occasionally increased into the range of 2.0 - 5.0 NTU at some sampling stations on certain occasions, only one sampling episode yielded a significant turbidity reading and profile. At one of the Eagle Rock site stations (Stn. 343) on September 16, a strong surface turbidity plume was measured with a reading of ~35 NTU just below the surface, and a reading of ~10 NTU at a depth of 3.7 m.

These results confirm the outcome of surface water turbidity plume tracking, and also suggest that higher frequency Secchi depth measurements near fish cages would provide a simple means of documenting local effects on water clarity. Augmenting these secchi depth data with occasional near-surface measurements of dissolved organic carbon (DOC) and chlorophyll would assist in their interpretation, as would documentation of weather conditions and presence of zebra mussels.

3.2.2 Dissolved Oxygen and Temperature Profiles

Typical temperature and dissolved oxygen profiles for each site type are shown in figures 6 to 8, with complete data in Appendix B, Table B.1. Dissolved oxygen and temperature profiles varied in a manner consistent with site classifications, with oxygen decreases being most apparent in type 1 and type 2 sites.

Eagle Island Reference Site

The August temperature profile exhibited a decrease from 20 ^{o}C at the surface to 9 ^{o}C at a depth of 25 m, whereas DO remains constant 9 mg/L throughout the water column. Both temperature and DO remained constant in the April 2000 profile indicating ice-free spring turnover conditions.

Type 1 site: La Cloche Channel

Aquaculture operations at the LaCloche Channel site were scaled back in the fall of 1997, the spring of 1998 and operations ceased in the fall of 1998. The historical cage site, Stn 326 temperature profile obtained on May 4, 1999 demonstrates that strong surface warming had already occurred, with surface temperatures of almost 13 ^{o}C and a temperature of nearly 9 ^{o}C at

Figure 6: Typical progression in dissolved oxygen profiles at the LaCloche type 1 site.

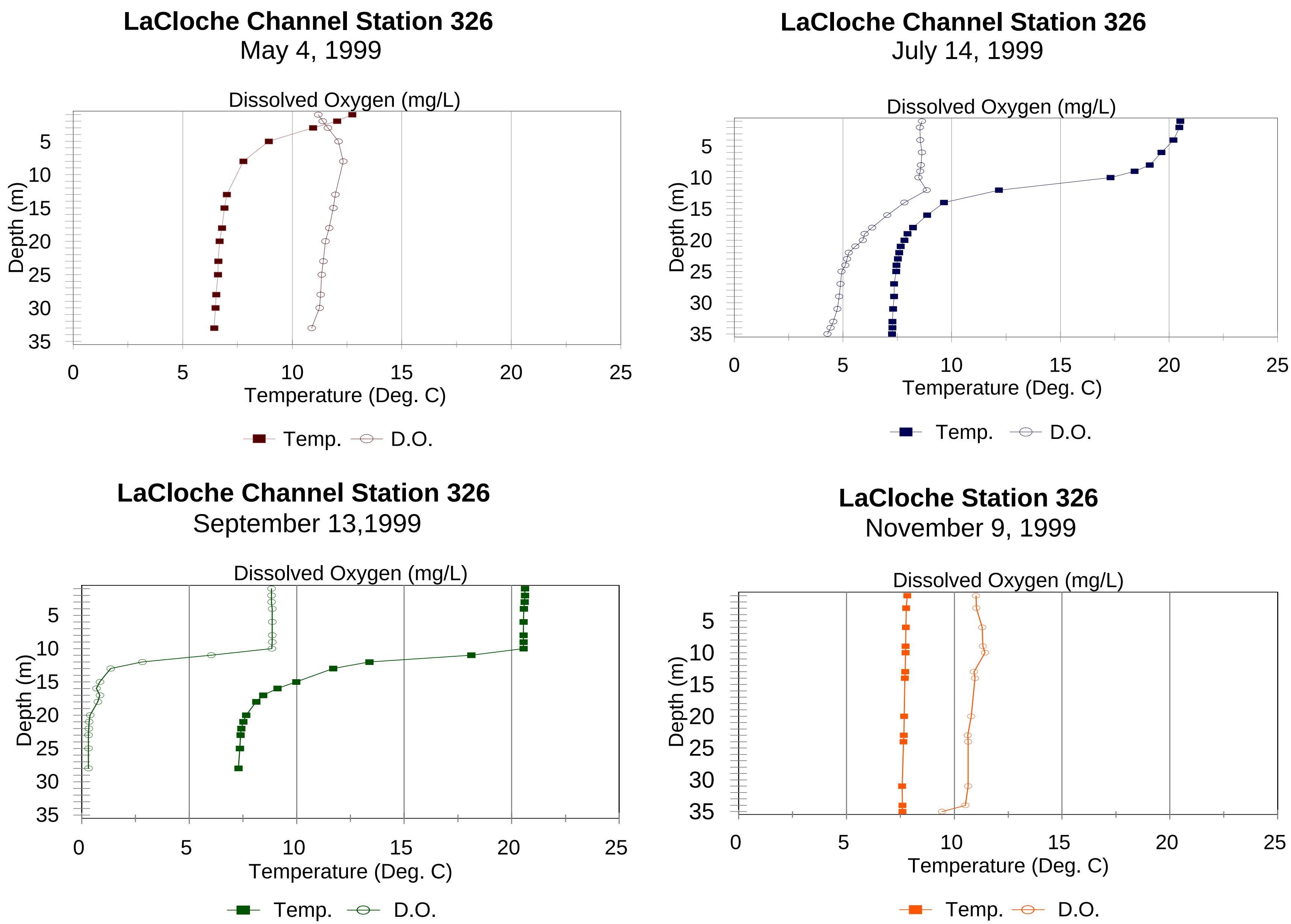


Figure 7: Typical progression of dissolved oxygen profiles at the Eastern Island type 2 site.

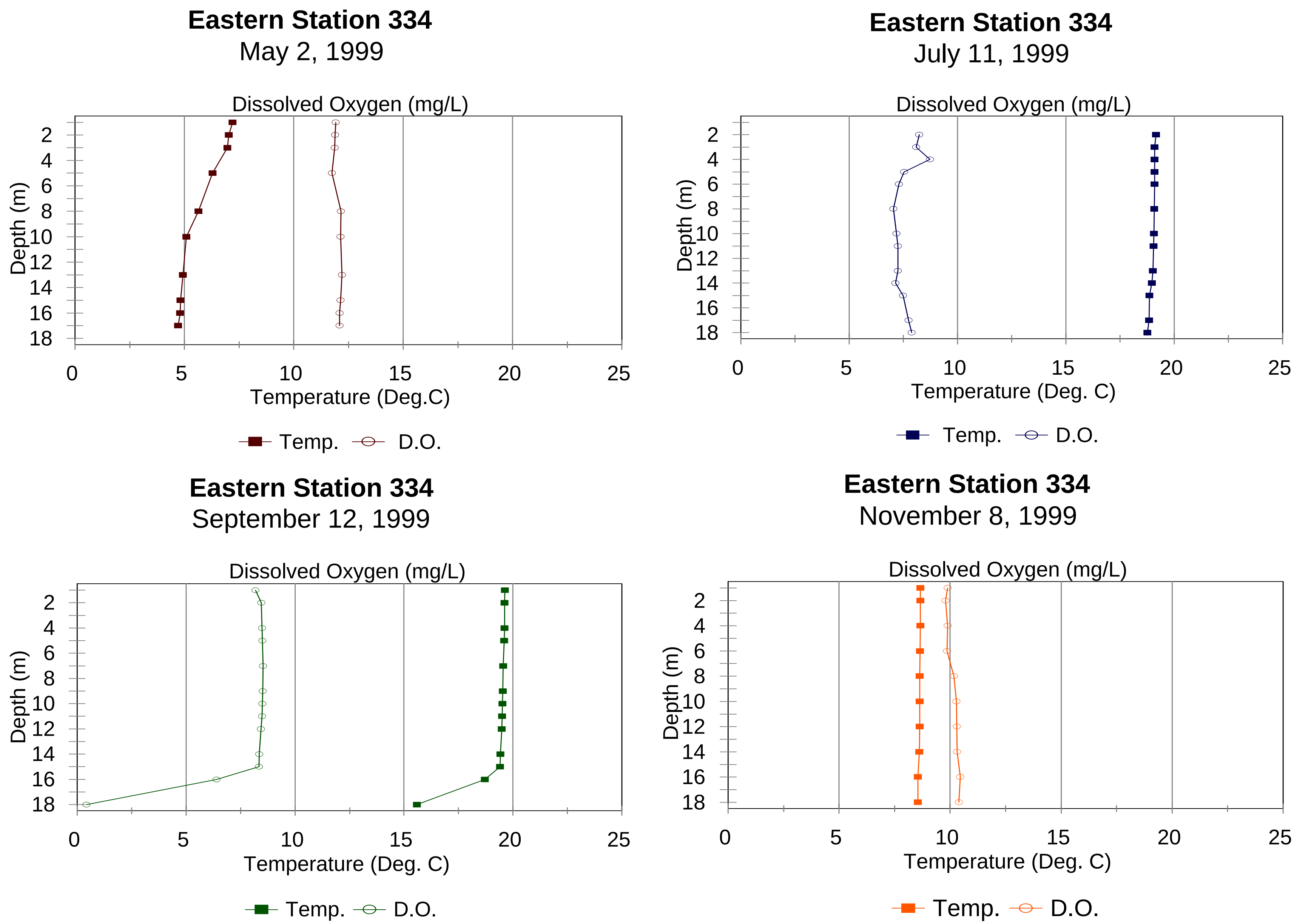
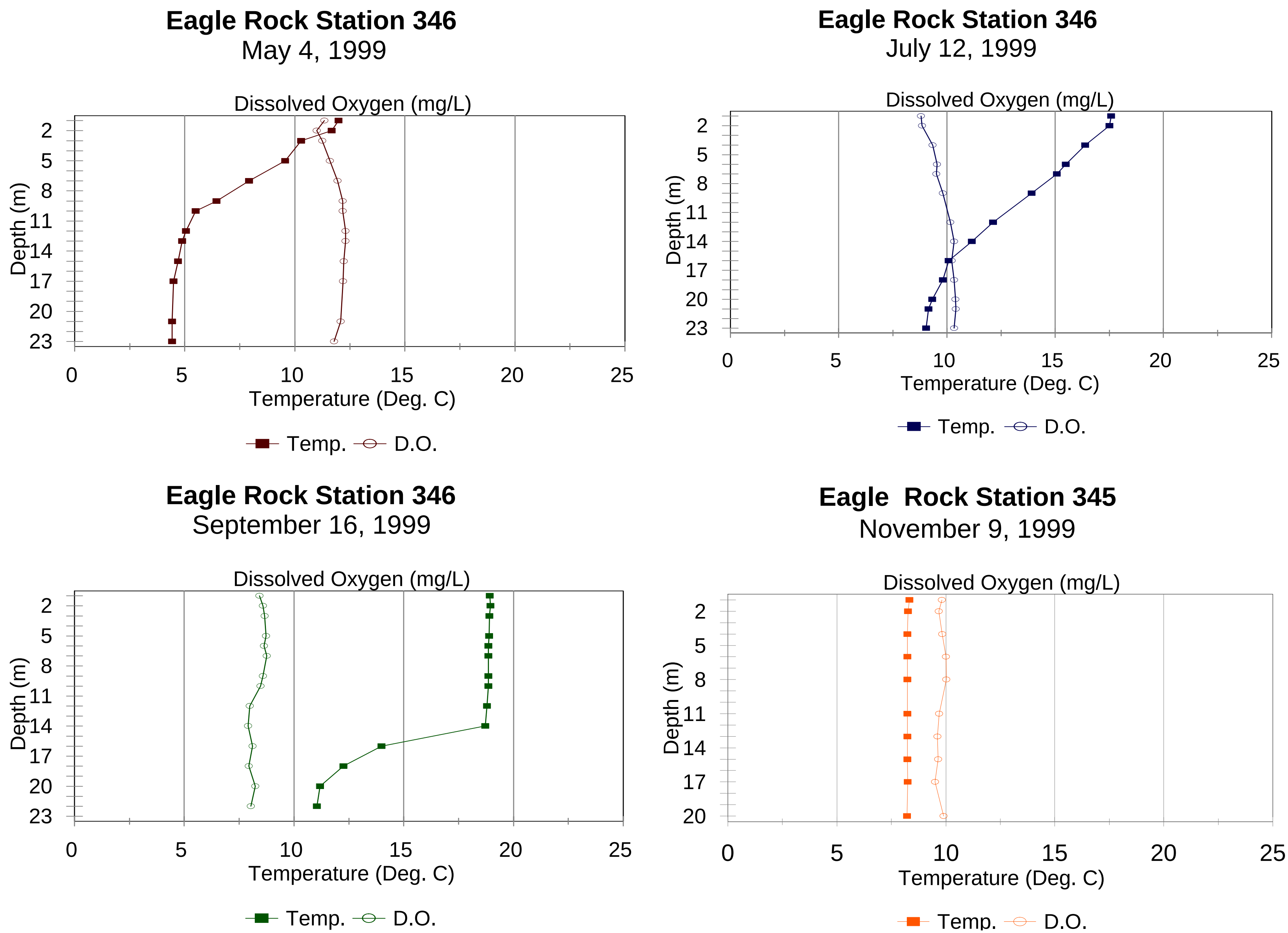


Figure 8: Typical progression of dissolved oxygen profiles at the Eagle Rock type 3 site



a depth of 5 m. By May 26 a distinct thermocline had developed at a depth of approximately 10 m and a virtually identical thermal profile was observed on September 13.

The July dissolved oxygen (DO) profile shows hypolimnetic oxygen depletion already well advanced with concentrations dropping below 6.0 mg L^{-1} at a depth of about 20 m. The September 13 DO profile demonstrates virtual anoxia below about 15 m, and concentrations of less than 6.0 mg L^{-1} below the thermocline at 10 m. It is worth noting that this condition was also observed in previous investigations on July 23 in 1998 (Boyd *et al.*, 1998; Unpublished).

Stn 2 with a water depth of 42 m is located in the local deep hole closest to the historical cage site. The May 26 DO levels remained greater than 6 mg L^{-1} throughout the water column. Unlike the May profile the July 19 profile shows evidence of DO depletion with DO levels less than 6 mg L^{-1} at depths greater than 17 m. Further DO depletion is evident in the August 16 and Oct 6 profiles. DO is less than 6 mg L^{-1} at 13 m and less than 1 mg L^{-1} at 33m in August and drops to less than 1 mg L^{-1} at depths greater than 27 m by Oct 6.

Despite the absence of any aquaculture activity at this site during 1999, and the diminished scale of 1998 operations, the residual effects of historic operations in this area were very much in evidence. However, the results do provide evidence of recovery at this site since July 1999 conditions were much improved compared with those obtained a year earlier. Although the time required for complete recovery at this site is still a matter of speculation, given the uncertainty associated with estimates of flushing time for this body of water, it is encouraging to see this progress and it would appear advisable to maintain a sufficient monitoring effort to track the recovery over the coming years.

Type 2 sites: Eastern Island and Bedford Harbour

Temperature profiles at these "Type 2" sites show surface warming between 7 ^{o}C and 10 ^{o}C as early as May 2 at both local reference stations and stations near the fish cages. At Stn. 335, the local deep station for Eastern Island, warming progressed throughout the season so that by September temperatures of nearly 19 ^{o}C were recorded throughout the entire water column to a depth of approximately 15 m. A similar pattern was recorded near the Eastern Island fish cages Stn. 334 although the extra depth at this site of 18 m resulted in the formation of a thermocline with a temperature gradient of 4 ^{o}C over the bottom 2 m of the water column. Progressive warming through the summer at the Bedford Harbour reference station, Stn. 336, resulted in late summer temperatures of approximately 20 ^{o}C to a thermocline at a depth of 13 m. Below this, a gradient of about 1 ^{o}C per metre occurred to a depth of 17 m, where the temperature stabilized at about 15.5 ^{o}C . A similar situation was observed at stations near the Bedford Harbour cages, Stns. 338 and 339, although bottom temperatures were slightly warmer at about 17 ^{o}C .

Mid and late summer DO at the Eastern Island local deep station remained at about 8.5 mg L^{-1} throughout the entire water column. At the slightly deeper fish cage Stn. 334/333 however DO concentrations dropped from ~ 8.0 mg L^{-1} to less than 1.0 mg L^{-1} in the 2 m near-bed zone where the steep temperature gradient was observed in both July and September. DO concentrations at the Bedford Harbour reference Stn. 336 remained at around 8.5 mg L^{-1} throughout the entire water column, whereas DO concentrations at deep water stations near the

cages dropped below 6.0 mg L^{-1} at depths greater than 14 m. In profiles taken in mid July and September at Stns. 339 and 338, as well as in three additional sites profiled near the cages in September, near-bed concentrations of less than 1.0 mg L^{-1} were observed, indicating near bed DO depletion.

The observed thermal structure and DO profiles at both these operations suggest that good vertical mixing took place with epilimnetic temperatures of 19 ^oC to 20 ^oC and depths to the late summer thermocline of 13 m to 15 m. Late summer, near-bed temperatures ranged from 15 ^oC to 17 ^oC. DO remained well above 6 mg L^{-1} throughout the water column at local deep stations and reference stations, however this was not the case at sites in the vicinity of the Eastern Island and Bedford Harbour fish cages although hypolimnetic temperatures remained above the 10 ^oC optimum for Lake Trout habitat. In addition to any potential adverse impact on cold water fish habitat, the low oxygen regime encountered near the bed at these sites, in combination with the localized nutrient enrichment of sediment, could be expected to manifest itself in alteration of the local benthic macroinvertebrate community. The extent of this potential effect is hard to quantify in the absence of direct sediment quality and benthic community assessment data, however the profile data suggest that this would be confined to a zone of less than 30 m from the cages.

The collection of benthic samples at a range of distances from type 1 and type 2 sites would quantify the extent of any adverse impacts on the benthic habitat at these sites and would alleviate concerns that it may be more widespread than water quality data suggest. It would also provide a means of tracking the progress of recovery at the decommissioned LaCloche site. In order to achieve these objectives, however, it will be necessary to establish in advance: (a) the level of taxonomic detail necessary for identification of benthic macroinvertebrates, (b) the location of sites for collection of reference samples, and (c) the statistical basis of any quantitative comparison that is to be made between the two and hence requirements for replication of samples.

Notwithstanding the potential for debate on the need for protection of cold water fish habitat or benthic macroinvertebrate habitat in the immediate vicinity of these fish cages, this observed tendency for localised hypolimnetic oxygen depletion at the Eastern Island and Bedford Harbour sites (which was also observed by MOE/NR in 1998) suggests that their capacity to accommodate additional loads of oxygen consuming substances is limited. Additional observations of weekly DO profiles would be prudent at these sites prior to any expansion above the current scale of operations.

Type 3 sites: Eagle Rock, Fisher Harbour, Buzwah, Depot Harbour

Temperature profiles at the remaining Manitoulin area “Type 3" sites showed similar patterns of surface warming in early May followed by thermal stratification and development of thermoclines at depths of 8 m to 12 m at Buzwah and approximately 14 m at Eagle Rock and Fisher Harbour. Late-summer temperatures in the epilimnion at these sites were about 18 ^oC or 19 ^oC , with hypolimnetic temperatures of around 11 ^oC (near optimum for Lake Trout habitat). Sampling at the Depot Harbour “Type 3" site occurred on April 29 at both the shallow winter and extremely deep summer cage locations. Depot Harbour was the one location in 1999 where

sampling was early enough to document isothermal profiles of 4 ^{o}C to 5 ^{o}C prior to any surface warming. Stratification was well established at summers site by mid summer with a thermocline at approximately 10 m. Late-summer temperatures in the epilimnion reached about 22 ^{o}C , with hypolimnetic temperatures of 7 ^{o}C or less.

DO profiles from all of these "Type 3" locations provide no basis for concern about hypolimnetic oxygen depletion with concentrations at all stations remaining comfortably above 6.0 mg L^{-1}.

3.3 Water Quality Sampling

Table 2 provides a summary of seasonal median values for all stations, while appendix C provides a complete data listing.

In general these data illustrate relatively homogeneous conditions for many of the water quality parameters under examination. Examination of Table D.1 suggests that total phosphorus (TP), phosphate, and total ammonia (ammonium) were the primary indicators of local gradients in water quality. Concentrations of total ammonia were elevated well above background concentrations in the vicinity of most fish cages, particularly at the Eastern Island "Type 2" site and the Depot Harbour "Type 3" winter site. Vertical and horizontal gradients of TP and phosphate were also evident in the vicinity of fish cages at the decommissioned LaCloche Channel site, the Eastern Island site, and the Depot Harbour site (winter location).

Although elevated above background, the observed concentrations of total ammonia were far too low for concentrations of unionised ammonia to approach the PWQO of 20 µg L^{-1} at the range of temperatures and pH encountered. Ammonia toxicity is clearly not an issue in the vicinity of these aquaculture operations although the oxygen demand associated with the nitrification of ammonia may still be a potential concern. As a result, it may be helpful to include ammonia in operational monitoring at "Type 1" and "Type 2" sites, where hypolimnetic oxygen depletion is a potential concern and has been directly observed. Direct monitoring of DO at these locations would obviously be of primary significance, but the provision of ammonia concentration data could provide useful insight into the relative significance of localised oxygen demand associated with fish faeces compared with the indirect effects of oxygen consumption associated with algal blooms.

The pattern of increased TP and phosphate concentrations in near-bed samples at the decommissioned LaCloche Channel site, the Eastern Island site, and the Depot Harbour winter site contrasts with that observed at reference stations and is consistent with the effects of increased algal productivity followed by settling and decomposition. It should be noted that near-bed samples were not taken for chlorophyll and can not directly corroborate this hypothesis. Although these data are not sufficient to quantify ice-free mean TP concentrations, these near-source vertical gradients bracketing depth-integrated seasonal mean TP concentrations emphasise the importance of obtaining depth-integrated results over the entire water column for a realistic assessment of average TP concentrations.

Estimating ice-free mean TP concentrations at sampling stations exhibiting vertical gradients

Table 2: List median values for selected water quality parameters

Location	Sample Type	Number of Sites	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand
Eagle Island Reference	Epilimnion Composite	3	0.004	0.0015	0.14	0.002	0.248	1.7	15.2	2.2	8.07	172	1.0	0.75	5.9		
	Bottom	3	0.004	0.0015	0.16	ND	0.257	1.7	15.4	2.6	8.03	175	1.5	0.76			
Bedford Harbour	Surface	4	0.006	0.0013	0.16	0.011	0.211	1.9	15.6	1.6	8.10	175	1.0	0.77	5.9	4	0.6
Proximal Cage Sites	Epilimnion Composite	4	0.009	ND	0.19	0.016	0.185	1.7	15.8	1.5	7.95	176	1.3		4.7		0.7
	Bottom	4	0.007	0.0018	0.19	0.016	0.200	1.9	15.9		8.03	175	1.3	0.78		6	0.5
Eastern Island	Surface	4	0.008	0.0013	0.20	0.025	0.202	1.8	15.5	1.9	8.01	170	1.0	0.69	6.4	6	0.6
Proximal Cage Sites	Epilimnion Composite	4	0.010	ND	0.22	0.020	0.178	1.7	15.7	1.8	8.04	174	1.3		4.9		0.6
	Bottom	4	0.012	0.0029	0.20	0.025	0.207	1.8	15.4		7.97	173	1.6	0.87		6	0.6
LaCloche	Surface	7	0.006	0.0010	0.20	0.008	0.035	2.0	15.2	1.4	8.05	169	1.0	0.41	7.1	5	0.4
Historical Cage Site	Epilimnion Composite	*3*	0.006	ND	0.20	0.016	0.055	1.9	15.6	1.6	8.03	169	1.0		6.4		0.6
	Bottom	5	0.032	0.0095	0.28	0.024	0.190	2.1	16.4		7.49	176	1.5	0.70		7	0.8
Buzwah	Surface	4	0.003	0.0008	0.17	0.014	0.213	1.7	16.5	1.0	8.15	186	0.8	0.53	6.3	5	0.6
Proximal Cage Sites	Epilimnion Composite	4	0.006	0.0010	0.16	0.011	0.210	1.6	16.3	1.0	8.10	181	1.0		7.3		0.6
	Bottom	4	0.005	0.0010	0.18	0.010	0.221	1.6	16.5		8.10	187	1.3	0.74		5	0.6
Eagle Rock	Surface	4	0.005	0.0019	0.18	0.016	0.179	1.7	16.1	1.3	8.09	179	1.0	0.55	6.9	5	0.5
Proximal Cage Sites	Epilimnion Composite	4	0.008	0.0005	0.20	0.028	0.205	1.8	16.6	1.5	8.00	183	1.0		6.3		0.6
	Bottom	4	0.008	0.0018	0.18	0.022	0.212	1.7	16.8		8.06	185	1.3	0.71		4	0.6
Fisher Harbour	Surface	4	0.007	0.0005	0.16	0.014	0.214	1.7	16.2	1.4	8.11	181	1.0	0.55	7.1	5	0.7
Proximal Cage Sites	Epilimnion Composite	4	0.008	0.0005	0.18	0.011	0.208	1.6	16.6	0.8	8.16	184	1.0		6.7		0.6
	Bottom	4	0.007	0.0005	0.16	0.013	0.225	1.6	16.5		8.09	185	1.1	0.62		4	0.7
Depot Harbour	Surface	3	0.007	0.0028	0.21	0.016	0.217	2.5	11.3	2.3	7.93	142	1.3	0.43	6.7	5	0.8
Proximal Winter Cage Site	Bottom	3	0.017	0.0030	0.27	0.022	0.216	2.5	11.4		7.95	142	1.0	0.44		6	0.7
Depot Harbour	Surface	4	0.005	0.0015	0.20	0.004	0.205	2.5	11.6	1.2	7.86	143	1.0	0.37	7.7	4	0.6
Proximal Summer Cage Site	Bottom	4	0.004	0.0015	0.18	0.006	0.290	2.3	11.6		7.84	137	0.5	0.29		4	0.4

following stratification is potentially challenging since these gradients could reflect a number of limnological and biological phenomena. The key question is whether increased hypolimnetic TP concentrations increase whole water column TP concentrations after fall mixing, and whether this carries through to the following spring. It is also difficult to assess the potential for transient increases in the epilimnion (photic zone) during the summer to result in secondary, localised algal blooms.

A rigorous approach to monitoring in these situations would require the collection of data sufficient for the computation of a volume or depth weighted mean concentration during the stratified period, which would involve collection and separate analysis of samples from at least four depths: one in the epilimnion, one in the metalimnion, and two in the hypolimnion. However, given the logistics and costs associated with a more rigorous sampling approach, well-mixed samples taken in spring and fall may provide an expedient means of characterising mean TP concentrations.

Notwithstanding the complexity of estimating ice-free mean concentrations of TP, the near-surface and near-bed median concentrations of TP shown in Table 2 suggest that in 1999 ice-free mean concentrations of TP exceeded 10 µg L^{-1} at the decommissioned LaCloche site and may have exceeded 10 µg L^{-1} in the immediate vicinity of the Eastern Island site and the Depot Harbour winter site. There is no evidence that this would have been the case at the Bedford Harbour, Eagle Rock, Fisher Harbour, Manitowaning Bay, or Depot Harbour summer sites.

In the case of the “Type 1" LaCloche and “Type 2" Eastern Island sites, the vertical phosphorus gradient corresponds with evidence of hypolimnetic DO depletion and supports a precautionary “wait-and-see” approach to the expansion of operations at the Eastern Island site, as well as clearly illustrating the need for further recovery at the LaCloche Channel. At the “Type 3" Depot Harbour winter site, the observed median seasonal TP concentration suggests that the seasonal mean TP concentration was above local background concentrations and may have slightly exceeded the 10 µg L^{-1} threshold indicating the potential for enhanced algal productivity. The seasonal median chlorophyll concentration of 2.3 µg L^{-1} observed at this location is also slightly higher than that observed at other locations and may also reflect some localised enhancement in algal productivity.

The significance of the potential for localised aesthetic deterioration observed in 1999 at the Eastern Island and Depot Harbour winter sites will depend upon the representativeness of these limited data and the potential for conflict with other water users, if any, in the immediate vicinity of these operations. At Eastern Island the more direct issue of hypolimnetic DO depletion already suggests that further expansion of the operation is not advisable until additional data have been collected. The Depot Harbour site, on the other hand, has been operational for nearly 20 years without complaints regarding aesthetic degradation. This implies that any effects of nutrient enrichment and nuisance algae blooms have been sufficiently localised to prevent any interference with adjacent property owners or water users, or that conditions observed in 1999 were not representative of typical conditions over this period. Additional monitoring throughout the ice-free period at the winter location would provide further insight into the situation.

3.4 Sediment Sampling

Table 3 describes biological and chemical features observed in each sediment sample collected and Table 4 provides a list of sediment quality results. Locations of sediments sampling stations for LaCloche Channel are illustrated in Appendix A, Figure A.5.

Table 3.0: Description of chemical and biological features found in sediment near aquaculture sites.

Station Name	Stn #	Biological Features	Chemical Features
Bedford Harbour	336	Periphyton 0.2cm thick 50% coverage, sparse biota, nodules Present	None
Bedford Harbour	342	Sparse to abundant biota, fine detritus	None
Bedford Harbour	339	Periphyton 0.2cm thick 10% coverage, sparse to moderate biota, fine detritus	None
Bedford Harbour	341	No biota, no periphyton, fine detritus	Odour, slight Sheen
Fisher Harbour	356	No periphyton, sparse to moderate biota, fine detritus	None
LaCloche Channel	326	None, fine detritus	Sulphur odour, slight sheen
LaCloche Channel	451	Couple of worm tunnels, oligochaetes and chironomids present, fine detritus	Sulphur odour, slight sheen
LaCloche Channel	452	Bacterial slime on surface, no biota	None
LaCloche Channel	453	Bacterial slime on surface, sparse oligochaetes and chironomids, fine detritus	Sulphur, rotting organic odour
LaCloche Channel	454	Bacterial slime on surface, no biota	Sulphur odour, slight sheen
LaCloche Channel	455	Bacterial slime on surface, sparse oligochaetes and chironomids, fine detritus	Sulphur odour, slight sheen
LaCloche Channel	456	None, fine detritus and plant material	Sulphur odour, slight sheen

Cage Samples

Sediment samples taken in the immediate vicinity of cages had a sulphur odour, an oil sheen appearance, and had no biological features with the exception of the presence of detritus in the form of seeds and plant material. All of these samples contained total phosphorus levels that exceeded the lowest effect level of 0.6 mg g^{-1} , and in some instances exceeded the serve effect level of 2.0 mg g^{-1} . At two stations in the LaCloche Channel, TOC concentrations exceeded the severe effect level of 100 mg.g^{-1}, and total nitrogen at most of the LaCloche stations exceeded sediment SELs of 4.8 mg.g^{-1}.

The occurrence of severe effect level concentrations of phosphorus in the immediate vicinity of the cages suggested the possibility of a pronounced disturbance to the sediment-dwelling community (MOE, 1993). Severe effect level concentrations of TOC at several of these sites also suggest degradation of sediment quality in the vicinity of the aquaculture stations. Further in-depth research of sediment quality was conducted in 2001 and will be reported in a subsequent document.

Table 4: Sediment quality results observed in each sediment sample.

Station	Date	Total Organic Carbon (mg/g dry)	Total Kjeldahl Nitrogen (mg/g) dry	Total Phosphorus (mg/g) dry	Total Loss Ignition Solids (mg/g) dry	Particle Size % > 1000 um, < 2000 um	Particle Size % > 63 um, < 1000 um	Particle Size % > 63 um	Beryllium (ug/g)	Magnesium (ug/g)	Aluminum (ug/g)	Calcium (ug/g)	Vanadium (ug/g)	Chromium (ug/g)	Manganese (ug/g)	Iron (ug/g)	Cobalt (ug/g)	Nickel (ug/g)	Copper (ug/g)	Zinc (ug/g)	Molybdenum (ug/g)	Cadmium (ug/g)	Barium (ug/g)	Lead (ug/g)	Strontium (ug/g)	Titanium (ug/g)
339	05/03/99	24	2.9	0.8	56	0.6	41.3	58.2	0.9	9300	19000	6600	51	53	390	27000	13	87	41	110	0.5	0.9	98	34	34	950
339	05/03/99	28	2.9	0.8	63	0.8	41.4	57.9	0.9	9700	20000	6900	53	55	370	27000	13	100	46	120	0.5	1.0	100	40	35	1000
341	05/03/99	44	4.1	1.8	83	0.3	43.4	56.3	0.9	9900	19000	9400	50	54	330	26000	13	97	51	220	0.5	1.2	100	38	36	740
341	05/03/99	66	7.4	3.3	120	0.6	39.5	59.9	0.9	9700	19000	12000	50	53	340	25000	12	94	54	330	0.5	1.3	110	40	43	600
341	11/08/99	39	3.8	1.4	78	3.9	62.6	33.5	0.9	9600	20000	7900	53	54	320	27000	13	110	54	190	0.5	1.3	100	42	35	920
341	11/08/99	41	3.8	1.5	83	1.1	59.6	39.3	0.9	9700	20000	8500	54	55	320	26000	13	100	54	200	0.5	1.1	110	46	37	880
336	05/03/99	8	1.1	0.9	27	0.3	24.1	75.5	0.6	5400	11000	5200	43	35	4800	35000	16	120	20	72	0.8	1.0	320	23	32	760
336	05/03/99	5	1.0	0.8	23	0.8	23.2	76.4	0.5	5400	11000	5000	40	32	4700	30000	15	110	20	67	0.6	1.1	290	22	30	710
342	05/03/99	21	2.2	0.9	46	0.2	50.3	49.5	0.8	8200	17000	6000	50	47	1600	27000	13	150	41	120	0.5	1.0	110	46	32	790
342	05/03/99	20	2.0	0.8	49	0.6	48.7	50.7	0.9	8500	18000	6200	52	49	1500	28000	13	150	41	120	0.5	1.2	110	46	34	820
356	05/07/99	41	4.6	1.4	91	1.3	28.9	69.7	1.1	11000	24000	7500	63	61	7300	40000	18	140	70	190	1.0	2.2	340	77	45	730
356	05/07/99	36	4.3	1.2	86	0.7	32.2	67.0	1.2	11000	25000	7500	63	63	6000	39000	19	140	71	200	0.5	2.3	320	79	44	730
360	11/09/99	47	5.6	2.8	91	0.3	78.6	21.1	0.5	5700	12000	7300	36	34	620	18000	9.9	68	40	280	0.5	1.1	91	35	29	500
360	11/09/99	34	3.6	2.5	69	0.1	76.3	23.6	0.5	5300	11000	6900	33	33	520	16000	7.9	58	31	220	0.5	0.9	79	29	28	500
326	07/14/99	100	12	2.0	220	0.0	8.0	92.3																		
451	07/14/99	91	11	1.4	200	0.0	6.0	93.4																		
452	07/14/99	6	0.8	0.4	16	0.0	73.0	27.3																		
453	07/14/99	94	12	1.9	210	0.0	8.0	91.8																		
454	07/14/99	130	15	4.3	270	0.0	29.0	71.7																		
455	07/14/99	93	11	1.3	200	0.0	6.0	93.6																		
456	07/14/99	80	8.9	0.8	170	0.0	4.0	96.3																		

SUMMARY AND RECOMMENDATIONS

4.1 Summary of Findings

The objective of this study was to provide the data necessary to meet the Technical Team's short-term goals to evaluate the draft MOE recommendations for monitoring requirements (MOE,1999), assess and develop "trigger" limits at which operators would be required to undertake additional monitoring and/or abatement actions, and assist in the selection and development of appropriate models for relating receiving water impacts to emissions from aquaculture operations. Monitoring results yielded the following observations and findings:

- Results from sampling at a range of sites during 1999 suggest qualitatively, that the "common sense" classification of aquaculture sites into three categories based on basic limnological criteria is worthwhile and provides a rational basis for "tailoring" monitoring requirements.

- Plume monitoring for conductivity, turbidity, chlorophyll fluorescence, and hydrocarbon fluorescence demonstrated the ephemeral and transient nature of near-surface plumes, making it difficult to quantify the physical extent of operation zones that did not meet the PWQO requirements for various water quality parameters.

- Conductivity, turbidity, and pH profiling from all sites showed very little vertical variation and do not appear to be useful indicators of water quality effects near these fish farm operations.

- Profiling results agreed with the findings of surface water plume tracking and suggest that higher frequency daily or weekly observations of water clarity using Secchi depth measurements near fish cages would provide a simple cost-effective means of documenting local effects on water clarity and would provide operators with useful feedback on the relationship between operational activities and localized short term effects on water clarity.

- Despite the absence of any aquaculture activity at the "Type 1" LaCloche site during 1999, and the diminished scale of 1998 operations, the residual effects of historic activities were very much in evidence even though the July 1999 conditions were much improved compared with those obtained a year earlier.

- The localized hypolimnetic oxygen depletion observed at the Eastern Island and Bedford Harbour sites suggests that additional observation of water quality effects including high frequency (weekly) post-stratification DO profiling would be prudent at these sites prior to any expansion above the current scale of operations. Although the near-bed DO depletion at these sites indicates the loss of habitat for cold water biota such as Lake Trout and sensitive benthic macroinvertebrates such as mayflies, the corresponding temperatures of between 15 ^{o}C and 17 ^{o}C were above the optimum for cold water fish species and the impact appears extremely localized.

- DO profiles from “Type 3" locations, Eagle Rock, Fisher Harbour, Manitowaning Bay, Depot Harbour, showed concentrations at all stations comfortably above 6.0 mg L^{-1} and consequently there appears to be no need for high-frequency DO profiling at these sites. Monthly post-stratification monitoring would ensure that long-term, regional effects are not manifesting themselves.

- Primary indications of local gradients in water quality were manifested in DO, temperature, total phosphorus (TP), phosphate, and total ammonia. Relatively homogeneous conditions were observed during 1999 for most other water quality parameters examined.

- Ammonia toxicity is not a concern in the vicinity of observed aquaculture operations, although the oxygen demand associated with the nitrification of ammonia may still be a potential concern at “Type 1" and “Type 2" sites and additional monitoring effort may be merited at such locations.

- While direct monitoring of DO at “Type 1" and “Type 2" sites will be of primary significance, the inclusion of ammonia in operational monitoring at “Type 1" and “Type 2" sites could provide useful insight into the relative significance of localized, direct oxygen demand.

- Ice-free seasonal averages of TP during 1999 exceeded 10 µg L^{-1} at the decommissioned LaCloche site and may have exceeded 10 µg L^{-1} in the immediate vicinity (i.e. ~ 30 m) of the Eastern Island site and at the Depot Harbour winter site. At the Bedford Harbour, Eagle Rock, Fisher Harbour, Manitowaning Bay, or Depot Harbour summer sites, ice-free seasonal averages of TP during 1999 did not exceed 10 µg L^{-1} near the fish cages.

- The vertical TP gradients observed at the “Type 1" LaCloche and “Type 2" Eastern Island sites correspond with evidence of hypolimnetic DO depletion and support a precautionary “wait-and-see” approach to expanding operations at the Eastern Island site, as well as reinforcing the need for further recovery of the LaCloche Channel.

- The observation of vertical TP gradients reinforces the need for depth-integrated sampling over the entire water column as standard protocol, subject to practical limitations at the extreme depths encountered near Parry Sound, for the assessment of ice-free seasonal means.

- 1999 monitoring results suggest that increasing the frequency of TP water quality sampling to more than once per month during the summer, stratified period would provide little additional insight into ice-free seasonal average concentrations unless multi-depth sampling sufficient to permit computation of volume/depth weighted mean concentrations were included. However, pending the outcome of additional data analysis and discussion, it may prove more efficient to utilize data obtained during the spring and fall well-mixed periods for characterization of ice-free, seasonal mean concentrations of TP.

- The localized nature of water quality effects observed at fish farms and the agreement between 1999 reference sites results with other MOE data indicate that monitoring at the seven sites recommended in the May 1999 *Interim MOE Monitoring Protocols* could be modified to focus on fewer stations in the immediate vicinity of fish cages without significant loss of useful information. Field experience in the location and relocation of sampling stations near fish cages suggests that a standard distance of 30 m from the cage assemblages to a maximum of 100 m from the centre of cages as specified in the MNR Land Use Permits would provide a practical operational zone for aquaculture operations with respect to MOE water quality objectives.

- Although it is desirable and necessary to standardize monitoring criteria wherever possible, there is also a practical need to tailor sampling locations to site-specific circumstances, and consequently the identification of actual sampling coordinates at a given aquaculture operation should be based on examination of the proposed configuration of cage assemblages on a site-by-site basis.

- Future monitoring throughout the ice-free period will provide further insight into the significance of the potential for localized aesthetic deterioration observed in 1999 at the Eastern Island and Depot Harbour winter sites.

- The range of water quality tests conducted in this study provided ample information on the status of water quality in the vicinity of caged aquaculture sites. However, only a subset of the information analysed served as consistent indicators of changes in water quality. TP and dissolved oxygen emerged as essential to water quality sampling at all sites. Ammonia should be sampled at “Type 1” and “Type 2” sites, because of its potential for contributing to oxygen depletion at these sites. In addition Secchi depths measurement should be recorded on a frequent basis during the ice-free season because it serves as a cost-efficient technique in monitoring changes in water quality.

- Initial findings from the sediment survey highlighted an apparent need to monitor sediment chemistry at aquaculture sites. Although no further interpretation was made with respect to sediment chemistry, the occurrence of severe effect level concentrations of phosphorus and TOC in the immediate vicinity of the cages suggested the possibility of a disturbance to the sediment-dwelling community (MOE, 1993). Further in-depth study was undertaken in 2001 and will be reported in a subsequent MOE document.

4.2 Recommendations for Revisions to Operational Monitoring:

Based on the data from this study, and comments received from members of the Technical Team in the spring of 2001, a series of recommendations were released in the April 2001 “Recommendations for Operational Water Quality Monitoring at Cage Culture Aquaculture Operations”. These recommendations are listed below.

Recommendation 1: Regional Background Water Quality

The relative effects of caged aquaculture operations need to be established and measured against local reference stations, with similar physical attributes. In order to provide clear,

unambiguous reference water quality data for TP, DO, and water clarity in the nearshore waters of North Channel, Lake Huron and Georgian Bay, MOE/EMRB will distribute results from routinely monitored MOE index/reference sites located at North Channel (Eagle Island), French River, Parry Sound, Pleasant Island (Parry Sound), and Moon Island.

The MOE network of index/reference stations is designed to provide information on where and how water quality conditions are changing over time by periodically monitoring a suite of environmental indicators. The comprehensive sampling effort associated with this activity includes spring, summer, and fall sampling for various "conventional" water quality indicators along with physical measurements such as thermal and optical profiles of the water column. These sites were sampled in both Georgian Bay and the North Channel in 1996. In 1999 the North Channel was sampled again as part of the "Lake Superior Intensive Year" and will be repeated as part of the MOE regular cycle. Georgian Bay will be sampled again in 2002 as part of the "Lake Huron Intensive Year" and these sites will also be re-sampled as part of the MOE regular cycle.

The fundamental intent of monitoring at these reference sites is to characterise the general background in the open area of Georgian Bay and North Channel. These data are not designed to document either short-term temporal variability or local spatial variability in specific water quality parameters such as total phosphorus (TP). Although this variability in TP undoubtedly occurs, the prime MOE interest is to assess whether this area has natural background concentrations less than 10.0 µg L^{-1} when interpreting Policy 1 and Policy 2 from MOE 1993: *Water Management Policies, Guidelines, Provincial Water Quality Objectives* (usually referred to as the "Blue Book") [2]. Existing MOE data consistently demonstrate median and mean TP concentrations for this area below the MOE quantification limit of 10.0 µg L^{-1}, ranging as low as the current absolute limit of detection which is 2.0 µg L^{-1}. These data also demonstrate no natural long-term increasing trend for total phosphorus (TP) at sites removed from the immediate influence of tributary mouths or urban/cottage/marina development. Variability attributable to these influences is not being incorporated into the background comparison for fish farms since the overall MOE goal is to ensure that any "Policy 2" areas not currently meeting the 10.0 µg L^{-1} criterion are diminished wherever possible. Sites which are already situated in an area with pervasive background concentrations greater than the characteristic, regional value of < 10.0 µg L^{-1} (such as Wolsley Lake) will require special consideration and consultation.

The use of these standardized data at these locations will preclude any concern that fish farm operations may influence their own standard for comparison. Industry concerns regarding the inequity of imposing restrictions on aquaculture operations as the result of shifts in local "background" concentrations attributable to anthropogenic influences other than fish farms are legitimate, however this should not be addressed by allowing further degradation in water quality. Instead, we recommend that any evidence of such a situation be used to promote

[2] *Policy 1*: In areas which have water quality better than Provincial Water Quality Objectives (PWQOs), water quality shall be maintained at or above the Objectives;
Policy 2: Water Quality which presently does not meet the PWQOs will not be degraded further and all practical measures will be taken to upgrade the water quality to the Objectives;

discussion between MOE and potentially responsible parties. Where necessary this should lead to changes in conditions of approval to all relevant water users, not just aquaculture operators.

Recommendation 2: Location of Water Quality Sampling stations
In addition to monitoring below fish cages, permanent water monitoring stations should be established by aquaculture operators at the four corners of offshore cages (i.e. not directly accessible form shore), or at the midpoints of three open sides at cages anchored near the shore. These stations should be situated 30 m (100 feet) from cages, or at the perimeter specified in the MNR site tenure agreement (currently a Land Use Permit), whichever is less (This provision requires that such a boundary be specified in the site tenure agreement either as a georeferenced centre point and radius, or as a series of georeferenced boundary markers.). In addition, two local reference stations will be established on a site-by-site basis as a means of assisting "upstream" and "downstream" conditions relative to fish cages, and should be established in similar orientation, and circulation as the cage site. Depending upon site-specific circumstances, a proximal deep (>20 m) station may also be established for temperature and dissolved oxygen (DO) monitoring only (see Recommendation 4). These locations will be used to collect water samples for laboratory analysis, as well as temperature and DO profiles.

Existing data demonstrate that water quality gradients occur close to aquaculture operations and that variability increases with proximity to cages. A distance of 30 m for near-cage stations represents a good compromise for near-cage sites given the variability encountered closer to the cages, as well as the uncertainty associated with positioning and changes in the deployment and orientation of individual fish cages. Setting the maximum distance for near-cage sampling at the perimeter specified in the site tenure agreement issued by MNR ensures that continued expansion of an operation does not automatically provide unlimited expansion of the corresponding operational zone with respect to MOE water quality objectives.

Although regional background conditions (as demonstrated by MOE data) will be used to set the trigger limit for phosphorus (see *Recommendation 3*), data from the two reference sampling stations will be crucial to the interpretation of water clarity (Secchi depth) data and will help establish the presence of other natural and anthropogenic nutrient sources which need to be taken into consideration by MOE if the trigger limit for phosphorus is exceeded.

Recommendation 3: Phosphorus Sample Collection and Data Analysis
A minimum of eleven water quality samples should be collected at each of the three or four near-cage stations and the two reference stations: three during spring turnover, five during the summer thermally stratified period, and three during fall turnover. The spring samples should be obtained at five-day to seven-day intervals following ice-out (typically during April), the summer samples at approximately monthly intervals during the period late-May through mid-October, and the fall samples at at five-day to seven-day intervals in the late fall (typically during late-October/early-November). These samples should be depth-integrated over the depth

[3] This provision requires that such a boundary be specified in the site tenure agreement either as a georeferenced centre point and radius, or as a series of georeferenced boundary markers.

of cages (typically 8m to 12m) and analyzed at a CAEL accredited laboratory for total phosphorus (TP) with a minimum detection limit of 2 µg L^{-1}, and a quantification limit of 10 µg L^{-1} or better (the current MOE quantification limit for routine analysis at the Rexdale laboratory).

The near-cage phosphorus data will be partitioned and median phosphorus concentrations will be computed as follows: (1) spring data (n = 9 or n = 12); (2) fall data (n = 9 or n = 12); and (3) ice-free seasonal data (n = 33 or n = 44). Spring results should be reported within 30 days of the last sample collection date except where noted, summer and fall results should be compiled and reported by the end of the calendar year.

1. Spring Data

If the spring median concentration of phosphorus is greater than or equal to 10 µg L^{-1} the operator will be required to:

(1) *Undertake an operational audit and submit an abatement plan identifying the steps that will be taken to increase the efficiency of the operation and to result in a net decrease in operational scale (feed quota) from the previous operating season;*

(2) *Consult with MOE to increase the frequency of summer and fall phosphorus sampling;*

(3) *Confirm the absence of nuisance algae related concerns with adjacent water users and property owners at the "upstream" and "downstream" boundaries specified in the site tenure agreement* [4].

2. Fall Data

If the fall median concentration of phosphorus is greater than or equal to 10 µg L^{-1} the operator will be required to:

(1) *Undertake an operational audit and submit an abatement plan identifying the steps that will be taken to increase the efficiency of the operation and to freeze the operational scale (feed quota) for the subsequent operating season;*
(2) *Consult with MOE to increase the frequency of phosphorus sampling in the spring, summer, and fall of the subsequent operating season; and*

(3) *Confirm the absence of nuisance algae related concerns with adjacent water users and property owners at the "upstream" and "downstream" boundaries specified in the site tenure agreement .*

3. Ice-free Seasonal Data

If the ice-free seasonal median concentration at the 30m near-cage stations is greater than or

[4] This could be achieved by deploying submerged artificial substrates for assessment of periphyton growth and comparing the total sea sonal periphyton biomass at these locations with similar substrates deployed at reference sites. Periphyton growth on submerged artifi cial substrates has been shown to be an accurate descriptor of phytoplankton response to nutrient enrichment (Smoot *et al.* 1998) and there are a number of references available to guide the design and deployment of these sampling devices and the corresponding data interpretation (A.P.H.A. 1992, Porter *et al.* 1993, Saravia *et al.* 1999, Barbour *et al.* 1999). Additional assessment of this approach has been undertaken by MOE.

equal to 10 µg L^{-1}, the operator will be required to:

(1) *Undertake an operational audit and submit an abatement plan identifying the steps that will be taken to increase the efficiency of the operation and to freeze the operational scale (feed quota) for the subsequent operating season;*

(2) *Consult with MOE to increase the frequency of phosphorus sampling in the spring of the subsequent operating season; and*

(3) *Confirm the absence of nuisance algae related concerns with adjacent water users and property owners at the "upstream" and "downstream" boundaries specified in the site tenure agreement*

The MOE "Blue Book" policy for interpretation of the relationship between TP enrichment and the potential for nuisance concentrations of algae is generally interpreted to require an estimate of the average, ice-free seasonal concentration of TP and data from the three or four proximal stations will allow this estimation (using 33 or 44 data points respectively). However, the "Blue Book" also acknowledges that this is an interim approach due to the complexity of the relationship between concentrations of TP and the production of nuisance algae in lakes. The "Blue Book" suggests that the interim objectives be considered as general guideline that should be supplemented by site-specific studies.

Existing MOE data reinforce the obvious need to recognise that the distribution of results across the ice-free season can provide important information that should not be overlooked when interpreting the data in the context of aquaculture operations. Although results from individual sampling stations and individual sampling days should not be interpreted in isolation, elevated spring turnover results will be of greatest concern since this will clearly signal the potential for an early season algal bloom and will cast doubt on the suitability of the location for aquaculture operations at the current scale. Elevated fall turnover results will be of next greatest concern since this will demonstrate a cumulative effect which remains apparent even after late fall mixing with hypolimnetic water and which may carry over into the spring of the following season.

There are a number of limnological and statistical factors to consider when recommending the best approach to sampling for estimation of ice-free average TP concentrations in a water body, particularly during the summer stratified period. Although it would be scientifically preferable to sample separately above and below the thermocline at a sufficient number of sample depths to estimate a concentration profile (i.e. at four or five depths), the goal here is to provide a reasonable estimate of average conditions at a particular location on a particular date as part of an overall seasonal average. For this reason we suggest that a sample integrated over the depth of cages will suffice, despite the potential for this to be biased low or high during the summer stratified period. The additional burden of sample collection and analysis that would be required in order to estimate depth, or volume, weighted mean TP concentrations based on concentration profile results is hard to justify given the use of the results. In cases where enhanced algal productivity has scavenged TP to the hypolimnion through settling of phytoplankton, and where

ice-free average conditions may be biased on the low side, the separate scrutiny of fall turnover results will provide a safety net (i.e. since TP-enriched hypolimnetic water will be mixed back into the water column at fall turnover).

Skewed samples can affect the power and significance of directional (or one-tailed) tests using arithmetic means, and since the TP concentration data near fish cages may exhibit positive skewness resulting from a few relatively elevated concentrations, this would require an appropriate data transformation to satisfy assumptions of normality. Since the overall goal here is to characterize seasonal average concentrations in order to flag the potential for nuisance-concentrations of algae, the use of the median [5] as a measure of central tendency is recommended as a way of simplifying the data analysis, especially since it is possible to estimate a 95% confidence interval about the median [6]. Although these data can be used to compute a median and confidence interval which can in turn be used to apply a statistically based comparison with the trigger limit (i.e. a one-tailed test at a given probability for a Type 1 error) it is important to note the limited sample size ($n = 9$ or $n = 12$) associated with spring and fall data reduces the power of the median-based one-tailed test to the point where the probability of a Type 2 error becomes unacceptably high. For this reason we recommend that application of a one-tailed test be limited to data sets where $n > 30$. This would include the ice-free seasonal data set (i.e. where $n = 33$ or $n = 44$) but not the spring data set or the fall data set.

The decision to set the TP trigger concentration at greater than or equal to 10 µg L^{-1} is a slight departure from previous recommendations which have set it at greater than 10 µg L^{-1} and is an arbitrary means of compensating for the fact that positively-skewed data will tend to yield a sample median TP concentration of less than 10 µg L^{-1} where the arithmetic mean is greater than 10 µg L^{-1} .

A TP trigger limit based on *"background plus*", rather than an arbitrary concentration of 10 µg L^{-1}, is theoretically superior in that preserves a more natural range of conditions and protects areas with the lowest natural background concentrations from absorbing the greatest relative impact. This approach is under consideration by MOE and MNR for application to inland lakes but is not yet established, nor is it contemplated for the Great Lakes. Notwithstanding the uncertainty regarding its general applicability in the Great Lakes, a practical concern in the case of monitoring at fish farms is the detection limit for routinely-available TP analyses at the MOE laboratory (or private sector laboratories) which cannot provide high-confidence quantification of TP at concentrations below 10 µg L^{-1} . This will be extremely problematic for a *"background plus"* approach since background concentrations in these waters are typically reported from the MOE laboratory in the range of 4 µg L^{-1} to 6 µg L^{-1} with the *caveat* that results are "trace only and should be interpreted with caution". Until a routine method yielding a quantification limit an order-of-magnitude below current levels becomes widely available the *"background plus"*

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[5] The median of a set of measurements is defined to be the middle value when the measurements are arranged in order of magnitude. In small sets of measurements with an even number of observations, the median will be the average of the two middle values when the measurements are arranged in order of magnitude.

[6] The recommended approach is that outlined in Zar (1984) which outlines a procedure for estimating the confidence interval of the median by considering the binomial distribution (Section 8.8, p. 113).

approach cannot be adopted. Clearly, if a particular background concentration is currently being reported as 4 µg L^{-1} ± 2 µg L^{-1} the data quality is not sufficient to stipulate a 50% increase as the permitted difference (and a 5 µg L^{-1} increase would be equivalent to imposing a 10 µg L^{-1} trigger limit).
This widespread limitation on TP data quality at concentrations of less than 10 µg L^{-1} also supports the use of a median statistic rather than the mean, since it is possible to compute a median using the semi-quantitative data at concentrations below 10 µg L^{-1} by ranking them together in one class labelled "less than 10 µg L^{-1} ". Pooling the data in this fashion would also make explicit the potentially spurious accuracy of means computed using concentrations in the range from 2 µg L^{-1} to 10 µg L^{-1}.

It is not our intention to invoke analytical data quality restrictions associated with TP as a reason for relaxed vigilance in connection to potential water impacts resulting from cage aquaculture operations. The MOE Laboratory Services Branch has been requested to develop and sanction a method for ultra low level TP analysis which will eventually allow a transition to a "*background plus*" approach, should the need arise. In the interim, the recommended trigger limit of 10 µg L^{-1} TP at 30 m from fish cages should be viewed in the context of potential concerns related to increases in TP as well as other monitoring recommendations.

The principal water quality concerns associated with elevations in TP stem from the expected increase in algal productivity which has the potential to cause aesthetic problems, and which can lead to increased hypolimnetic oxygen consumption as the result of algal settling and decomposition. Organic enrichment of sediment in areas affected by algae blooms may also occur leading to increased sediment oxygen demand and resulting in the loss of sensitive benthic macroinvertebrates such as mayflies. Direct monitoring of dissolved oxygen is the best means of assessing the influence of fish farm emissions of TP and ammonia on the oxygen status of local water quality, and effects on sediment can also be independently assessed.

This leaves the relationship between TP and aesthetic degradation as the principal reason to track localized TP concentrations for and comparison with a trigger limit. There is no simple cause-effect relationship between individual water quality observations of TP concentrations greater than 10 µg L^{-1} and increased concentrations of chlorophyll (as an indicator of algae) or decreased water clarity. These patterns emerge once these intrinsically variable data are aggregated. Since other measures of aesthetic degradation are also part of the recommended monitoring package, the currently recommended approach to separate assessment of (a) spring, (b) fall, and (c) ice-free seasonal TP concentrations is considered to be sufficient as an interim means of flagging the potential for aesthetic degradation.

Recommendation 4: Water Clarity Sample Collection and Data Analysis
High frequency (at least weekly) sampling for surface water clarity (Secchi depth and colour) should be undertaken at the three or four near-cage stations and the two local reference stations at all fish cage operations during the ice-free season. Results should be compiled and reported according to the schedule established for TP water quality results.

If the ice-free seasonal median water clarity (expressed as Secchi depth [7] with a precision of 0.2

m) is observed to be 10% less than the seasonal median for the two local reference locations (allowing for a reading error of ±0.1 m), then the operator will collate and provide a summary of wind, weather, and wave conditions corresponding to the sampling episodes. Depending upon the results of this data analysis, and a comparison with corresponding TP data the operator may be required to add opportunistic chlorophyll sampling (with the assistance of MOE) to the list of monitored parameters during the following field season during episodes of reduced water clarity. The criteria defining these episodes will be established through examination of the high frequency data.

Whether or not analysis of Secchi depth data reveals a statistically significant difference between near-cage and reference conditions, they will be of considerable assistance in the interpretation of other water quality information. Secchi depth monitoring provides an easy, well-established means of observing changes in surface water quality and is particularly well suited to documenting the effects of nutrient enrichment and enhanced algal productivity, provided the sampling frequency is high enough. Reporting of low water clarity observations and associated weather conditions will allow an assessment of possible causes, and will make it possible to develop a site-specific understanding of the normal range of conditions, versus those attributable to algal blooms. Opportunistic sampling for chlorophyll if the data provide evidence that episodes of reduced water clarity were potentially attributable to algae (e.g. no apparent correlation with storm conditions) will provide a direct means of elucidating the relationship between algal blooms and increased turbidity. Sampling protocols and arrangements for chlorophyll analysis will be developed in consultation with MOE.

Once operators have some experience with applying the routine, standard protocol for generation of Secchi depth data, they may find it a helpful means of monitoring their operations quite apart from its potential to alert MOE to algal blooms near fish cages. It appears to have the potential to be used as a tool for assessing the efficiency of feeding operations, and could provide instant feedback on the relationship between water quality in the immediate vicinity of fish cages and standard operating procedures.

Recommendation 5: Temperature/Dissolved Oxygen Sample Collection and Data Analysis
Temperature and dissolved oxygen (DO) results should be recorded at 1 m intervals at stations with depths of 20 m, and at 2 m intervals at stations in depths greater than this. For "Type 1" and "Type 2" sites, temperature profiling should be undertaken weekly at the deepest of the three or four near-cage water quality monitoring stations immediately following ice out. At some locations, an additional "proximal deep" sampling location will also be established. DO profiling at these stations should be undertaken at monthly intervals after ice out until temperature profiles indicate stratification has occurred, after which the profiling frequency should be increased and made concurrent with the weekly temperature profiling. Monthly temperature and DO profiling will suffice at "Type 3" site water quality monitoring stations. Results should be compiled and reported according to the general schedule established for water quality data except when observed DO concentrations fall below 54% saturation or 6 mg/L

[7] Instructions on the construction and use of a Secchi disc for measuring water clarity and colour will be provided to operators upon request.

(see below).

All observed DO concentrations of less than 54% saturation or 6 mg L^{-1} at either of the near-cage or proximal water monitoring locations will be immediately reported to MOE and MNR. The default consequence of this situation will be to maintain a regime of restricted, subsistence feeding pending the results of twice-weekly follow up profiling which will be triggered by this condition. Continued observation of DO concentrations less than 54% saturation or 6 mg L^{-1} will lead to a reduction in the site's operational scale (or feed quota) for the subsequent operational season. Pending discussion with MNR regarding the loss of cold water fish habitat, it may also require the development of a benthic sampling program sufficient to estimate the extent of any impairment to the benthic habitat.

Since hypolimnetic DO depletion provides direct evidence of enhanced oxygen consumption, DO concentrations of less than 54% saturation or 6 mg L^{-1} will also trigger a requirement to include total ammonia, as well as TP, for laboratory analysis of water quality samples.

The observation of hypolimnetic DO depletion following stratification at monitoring stations near "Type 1" and "Type 2" sites indicates a condition which may be irreversible until fall turnover replenishes deep water DO concentrations, regardless of any abatement action at the fish farm. The best that can be achieved is to ensure that the condition does not occur during the following season, and for this reason we suggest that the onus be on the operator to justify why a reduction in operational scale (or feed quota) not be imposed as the best means of achieving this goal.

The observation of hypolimnetic temperatures significantly greater than 10 ^oC may suggest that cold water fish habitat criteria are unreasonably stringent, but this must be weighed against the fact that DO concentrations of less than 47% saturation or 4 mg L^{-1} are also indicative of stress to warm water fish species and sensitive benthic macroinvertebrates. The direct observation of benthic macroinvertebrate community structure will assist in the interpretation of the biological significance of hypolimnetic DO depletion.

Loss of hypolimnetic DO is the most critical biological stress potentially associated with fish farming, and can be avoided by siting cages in "Type 3" areas (where the hypolimnion is well mixed), as well as by incorporating fish manure collection and treatment systems once they become commercially feasible. Although un-ionized ammonia concentrations are not expected to approach the PWQO, MOE data indicate that total ammonia is a good conservative tracer of "effluent" from aquaculture operations and hence the requirement for total ammonia data is justified as a means of exploring the potential for mitigation of DO depletion through reduction in the direct oxygen demand associated with ammonia nitrification.

Recommendation 6: Sediment Sample Collection and Data Analysis

Sediment sampling should be undertaken at the "upstream" and "downstream" boundaries specified in the site tenure agreement and at the two local reference sites. At a minimum, this sampling should be undertaken the year prior to any renewal of, or revision to, an existing aquaculture licence, or site tenure agreement. The precise sampling location(s) will be

*determined independently for each aquaculture operation based on examination of local bathymetry and prevailing current patterns; the goal will be to assess sediment quality at the boundary of the area occupied by the operator while making allowance for local sediment depositional factors. Sampling will occur once in duplicate during the May samplig period and once in duplicate during October with samples being analysed for particle size (%> 63*µm *) and nutrient status including total phosphorus (TP), total Kjeldahl nitrogen (TKN), total organic carbon (TOC) at a CAEL accredited laboratory. Results should be compiled and reported according to the schedule established for water quality TP data.*

If the data satisfy assumptions of normality, the mean nutrient (C, N and P) data at the boundary of the site tenure agreement (four samples at two stations) will be compared against the local reference station data (also having n = 8) using an appropriate t-statistic (e.g.: . 0.05). If assumptions of normality are not satisfied then a non-parametric (distribution-free) comparison will be made. If nutrient concentrations in sediment at the boundary of the site tenure agreement significantly exceed those at the local reference stations then the operator will be required to undertake an operational audit and submit an abatement plan leading to a reduction in the site's operational scale (or feed quota) for the subsequent operational season. Pending discussion with MNR regarding the loss of cold water fish habitat, it may also require the development of a benthic sampling program sufficient to estimate the extent of any impairment to the benthic habitat.

Concerns have been expressed regarding the potential for long-term, incremental effects on the aquatic ecosystem in the vicinity of fish cages, even for sites which do not exhibit direct evidence of oxygen depletion or nuisance algae. Experience in other jurisdictions and preliminary results of sediment sampling near fish cages in 1999 suggest that it would be prudent to include a monitoring component capable of detecting possible cumulative effects on sediment, and hence benthic habitat, before these effects become observable in the water column. Observed concentrations of TP, or TKN, or TOC at the boundary of the site tenure agreement which exceed those at appropriately chosen reference sites will provide clear evidence of a sediment "footprint" which is larger than the area in which they are licensed to operate and this will, in turn, provide evidence that the operational scale exceeds the carrying capacity of this licensed zone.

Nutrient enrichment of sediment is generally a concern because of potential impacts on sensitive benthic species or the potential for re-mobilization of phosphorus from the sediment into the overlying water column under the reducing conditions associated with severe hypolimnetic oxygen depletion (this latter concern will tend to occur in situations where DO and temperature profiling have already flagged a problem and is considered of secondary significance). The *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario* (MOE 1993) were designed to be consistent with the "Blue Book" and are intended to protect both benthic and pelagic aquatic life. "Severe Effect Levels" (SELs) have been empirically determined for various parameters as corresponding to those concentrations which *"... would be detrimental to the majority of benthic species"* and have been set for TOC, TP and TKN at 10%, 2.0 mg g^{-1}, and 4.8 mg g^{-1} respectively.

We recognize that sediment chemistry data should be used as a screening tool in conjunction with some means of biological assessment, such as identification and enumeration of benthic macroinvertebrates. It has been argued by some that use of a benthic index based on a rapid assessment approach followed by sediment chemistry assessment is a superior screening tool since it starts by observing a biological effect and then attempts to discern possible chemical cause-effect relationships. Although this is true in theory, benthic indices do not work well as "pass/fail" trigger limits due to the inherent variability in the results, and the difficulty in establishing a suitable means of quantifying the comparison with suitable reference data. For this reason, we are recommending that observation of TOC, or TP, or TKN sediment concentrations of at the boundary of the site tenure agreement which exceed those at appropriately chosen reference sites is a practical means of flagging whether the aquaculture operational "footprint" extends to the boundary of the site tenure agreement. This condition would provide clear evidence of a sediment "footprint" which is larger than the licensed area for a given aquaculture operation and will, in turn, provide evidence that the operational scale exceeds the carrying capacity of the licensed zone. This finding is considered to be sufficient to require serious modification of operational practices.

It has also been suggested that metals analysis be included in the sediment assessment since fish feed is enriched with metals such as copper, iron, manganese and zinc (G. Cole, *pers. comm*., National Research Council 1993) resulting in fish manure which exhibits some metal enrichment relative to background sediment concentrations (Naylor *et al.* 1998), and metal-enrichment in sediment beneath fish cages where the fish manure accumulates. Data collected by MOE near fish cages and beneath fish cages confirms the presence of elevated concentrations beneath fish cages, but provides no evidence of potentially harmful concentrations at stations 20m to 50m from the cages. The potentially toxic concentrations of metals which may be observable in the fish manure directly beneath fish cages also co-occur with extremely high nutrient concentrations which by themselves would be expected to have a significant effect on sensitive macroinvertebrates inhabiting this sediment. Although metals enrichment may have some possibilities as a tracer further from the cages, it is apparent that the nutrient enrichment will co-occur with any metals enrichment and will function as an adequate tracer of the aquaculture operational "footprint" without the need for additional routine metals analysis on sediment samples.

Recommendation 7: Evaluation and Modification of Monitoring Requirements
An annual review of monitoring requirements should take place based on the accumulated data and findings from the research community. Holding this review during the winter will allow consideration of the previous season's data and will allow any refinements to the monitoring requirements to be reflected in the following season's monitoring. Given the ongoing research activity, and continuing MOE development of a near field dispersion model for assessing the assimilative capacity at Type 2 and Type 3 sites, it is apparent that there will remain a need to periodically assess the utility and effectiveness of monitoring at aquaculture operations.

5.0 REFERENCES

American Public Health Association 1992: *Standard Methods for the Examination of Water and Wastewater (Chapter 10300 Periphyton)*, prepared and pubished jointly by: American Public Health Association, American Water Works Association, and Water Environment Federation.

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish*, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.

Boyd, D., Hobson, G., Neary, B., McBride, J., and Gale, P. 1998. Conditions at the LaCloche Channel during June and July 1998: Provisional Data Summary and Interpretation for Discussion. Unpublished

Nettleton, P. 2000. Preliminary Assessment of expected total Phosphorus Concentrations in the vicinity of the proposed Aquaculture site in Wabuno Channel. Unpublished

Gale, P. 1999. Technical memorandum: Water Quality Conditions Surrounding Aquaculture Cage Operations in the North Channel, Lake Huron and Depot Harbour, Georgian Bay. . Unpublished.

MOE 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. Ontario Ministry of Environment and Energy No. ISBN 0-7778-9248-7.

MOE 1994. Water Management Policies Guidelines Provincial Water Quality Objectives of the Ministry of the Environment and Energy. No. ISBN 0-7778-8473-9.

Ontario Ministry of the Environment1993: *Water Management Policies, Guidelines, Provincial Water Quality Objectives*.

National Research Council 1993: *Nutrient Requirements of Fish*, Subcommittee on Fish Nutrition, 124 pp.

Naylor, S.J., Moccia, R.D., and G.M. Durant 1999: The Chemical Composition of Settleable Solid Fish Waste (Manure) from Commercial Rainbow Trout Farms in Ontario, Canada, *North American Journal of Aquaculture*, Vol. 61, pp. 21-26

Persaud, D., Jaagumagi, R. and A. Hayton 1993: *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario* .

Porter, S.D., Cuffney, T.F., Gurtz, M.E., and M. R. Meador 1993: *Methods for Collecting Algal Samples as Part of the National Water-quality Assessment Program*, U.S. Geological Survey Open-File Report 93-409

Saravia, L.A., Giorgi, A. and F.R. Momo 1999: A photographic method for estimating chlorophyll in periphyton on artificial substrata, *Aquatic Ecology*, Vol. 33, No. 4, pp

Smoot, J.C., Langworthy, D.E., Levy, M. and R.H. Findlay 1998: Periphyton growth on submerged artificial substrate as a predictor of phytoplankton response to nutrient enrichment, *Journal of Microbiological Methods*, Vol. 32, pp. 11-19.

Zar, J.H. 1984: *Biostatistical Analysis*, p. 113, New Jersey: Prentice-Hall

Appendix A

Study Sites and Sampling Locations

Table A.1: Station coordinates in decimal degrees

	Reference Location		Spring 1999		Early Summer 1999		Late Summer 1999		Fall 1999		Spring 2000	
Station	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
311											46.0983	-82.2865
326	45.9984	-81.7626	45.9984	-81.7626	45.9985	-81.7625	45.9983	-81.7625	45.9984	-81.7625	45.9985	-81.7628
330	46.0798	-81.9604	46.0798	-81.9604	46.0798	-81.9603	46.0797	-81.9603	46.0797	-81.9602	46.0799	-81.9604
331	46.0802	-81.9589	46.0802	-81.9589	46.0802	-81.9601	46.0803	-81.9602	46.0804	-81.9599	46.0803	-81.9599
332	46.0809	-81.9600	46.0809	-81.9600	46.0813	-81.9607	46.0812	-81.9610	46.0813	-81.9615	46.0813	-81.9599
333	46.0803	-81.9610	46.0803	-81.9610	46.0803	-81.9617	46.0804	-81.9620	46.0804	-81.9619	46.0805	-81.9618
334	46.0806	-81.9610	46.0806	-81.9610	46.0806	-81.9610	46.0806	-81.9609	46.0806	-81.9610		
335	46.0832	-81.9678	46.0832	-81.9678	46.0832	-81.9679	46.0833	-81.9677	46.0831	-81.9677		
336	46.0394	-82.0581	46.0394	-82.0581			46.0394	-82.0586	46.0395	-82.0578	46.0394	-82.0582
337	46.0305	-82.0034	46.0305	-82.0034	46.0304	-82.0035	46.0308	-82.0030	46.0305	-82.0032	46.0306	-82.0033
338	46.0317	-82.0046	46.0317	-82.0046	46.0317	-82.0042	46.0319	-82.0047	46.0314	-82.0043	46.0316	-82.0048
339	46.0304	-82.0068	46.0304	-82.0068	46.0303	-82.0062	46.0305	-82.0068	46.0303	-82.0059	46.0305	-82.0067
340	46.0293	-82.0050	46.0293	-82.0050	46.0293	-82.0048	46.0293	-82.0050	46.0293	-82.0052	46.0294	-82.0049
341	45.0306	-82.0052	45.0306	-82.0052								
342	46.0438	-82.0180	46.0438	-82.0180	46.0449	-82.0204	46.0440	-82.0175	46.0437	-82.0177		
343	46.0084	-81.7348	46.0084	-81.7348	46.0086	-81.7349	46.0084	-81.7351	46.0084	-81.7351	46.0084	-81.7350
344	46.0076	-81.7345	46.0076	-81.7345	46.0074	-81.7344	46.0076	-81.7345	46.0075	-81.7348	46.0076	-81.7347
345	46.0075	-81.7337	46.0075	-81.7337	46.0076	-81.7336	46.0076	-81.7339	46.0078	-81.7338	46.0075	-81.7337
346	46.0084	-81.7336	46.0084	-81.7336	46.0086	-81.7342	46.0086	-81.7341	46.0088	-81.7342	46.0088	-81.7341
347	46.0073	-81.7318	46.0073	-81.7318	46.0071	-81.7317			46.0073	-81.7318		
347B	46.0073	-81.7318			46.0085	-81.7332						
347C	46.0073	-81.7318			46.0093	-81.7333						
348	48.0163	-81.7141	48.0163	-81.7141	46.0164	-81.7143	46.0163	-81.7140	46.0162	-81.7143		
349	45.7575	-81.7911	45.7575	-81.7911	45.7576	-81.7914	45.7577	-81.7912	45.7575	-81.7913		
350	45.7574	-81.7927	45.7574	-81.7927	45.7576	-81.7919	45.7574	-81.7919	45.7573	-81.7919	45.7575	-81.7927
351	45.7558	-81.7923	45.7558	-81.7923	45.7560	-81.7919	45.7561	-81.7921	45.7561	-81.7919	45.7558	-81.7919
352	45.7559	-81.7911	45.7559	-81.7911	45.7561	-81.7913	45.7564	-81.7911	45.7563	-81.7912	45.7559	-81.7911
353	45.7569	-81.7918	45.7569	-81.7918	45.7588	-81.7915	45.7569	-81.7918			45.7576	-81.7912
353B	45.7569	-81.7918			45.7711	-81.7920						
354	45.7506	-81.8108	45.7506	-81.8108	45.7674	-81.8103	45.7668	-81.8102	45.7674	-81.8112		
355	45.8262	-81.7546	45.8262	-81.7546	45.8260	-81.7542	45.8270	-81.7525				
356	45.9962	-81.7306	45.9962	-81.7306	45.9965	-81.7308	45.9959	-81.7301	45.9962	-81.7308		
357	45.9900	-81.7332	45.9900	-81.7332	45.9899	-81.7332	45.9902	-81.7331	45.9901	-81.7331	45.9903	-81.7333
358	45.9909	-81.7318	45.9909	-81.7318	45.9906	-81.7321	45.9905	-81.7322	45.9916	-81.7319	45.9906	-81.7322
359	45.9918	-81.7337	45.9918	-81.7337	45.9918	-81.7336	45.9915	-81.7338	45.9915	-81.7337	45.9916	-81.7338
360	45.9917	-81.7312	45.9917	-81.7312	45.9916	-81.7323	45.9916	-81.7326	45.9916	-81.7324	45.9916	-81.7324
361	45.9759	-81.7265	45.9759	-81.7265	45.9756	-81.7265	45.9760	-81.7264	45.9758	-81.7265		
361B	45.9759	-81.7265			45.9881	-81.7300						
361C	45.9759	-81.7265			45.9851	-81.7277						
410	46.0292	-81.9598									46.0292	-81.9598
411	46.0288	-81.9586									46.0288	-81.9586
830	45.3187	-80.1224	45.3187	-80.1224	45.3192	-80.1219	45.3185	-80.1224	45.3189	-80.1223		
831	45.3145	-80.1031	45.3145	-80.1031	45.3146	-80.1031	45.3145	-80.1029	45.3163	-80.1047		
831B	45.3145	-80.1031							45.3143	-80.1028		
831C	45.3145	-80.1031							45.3155	-80.1012		
832	45.3155	-80.1029	45.3155	-80.1029								
833	45.3199	-80.1053	45.3199	-80.1053			45.3198	-80.1052				
834	45.3212	-80.1072	45.3212	-80.1072	45.3222	-80.1115	45.3221	-80.1073	45.3198	-80.1055		
835	45.3191	-80.1080			45.3191	-80.1080	45.3190	-80.1080				
836	45.3200	-80.1115			45.3200	-80.1115	45.3199	-80.1114	45.3198	-80.1117		
837	45.3218	-80.1098			45.3218	-80.1098	45.3212	-80.1095				

Figure A.1

Bedford Harbour and Eastern Island Aquaculture Stations

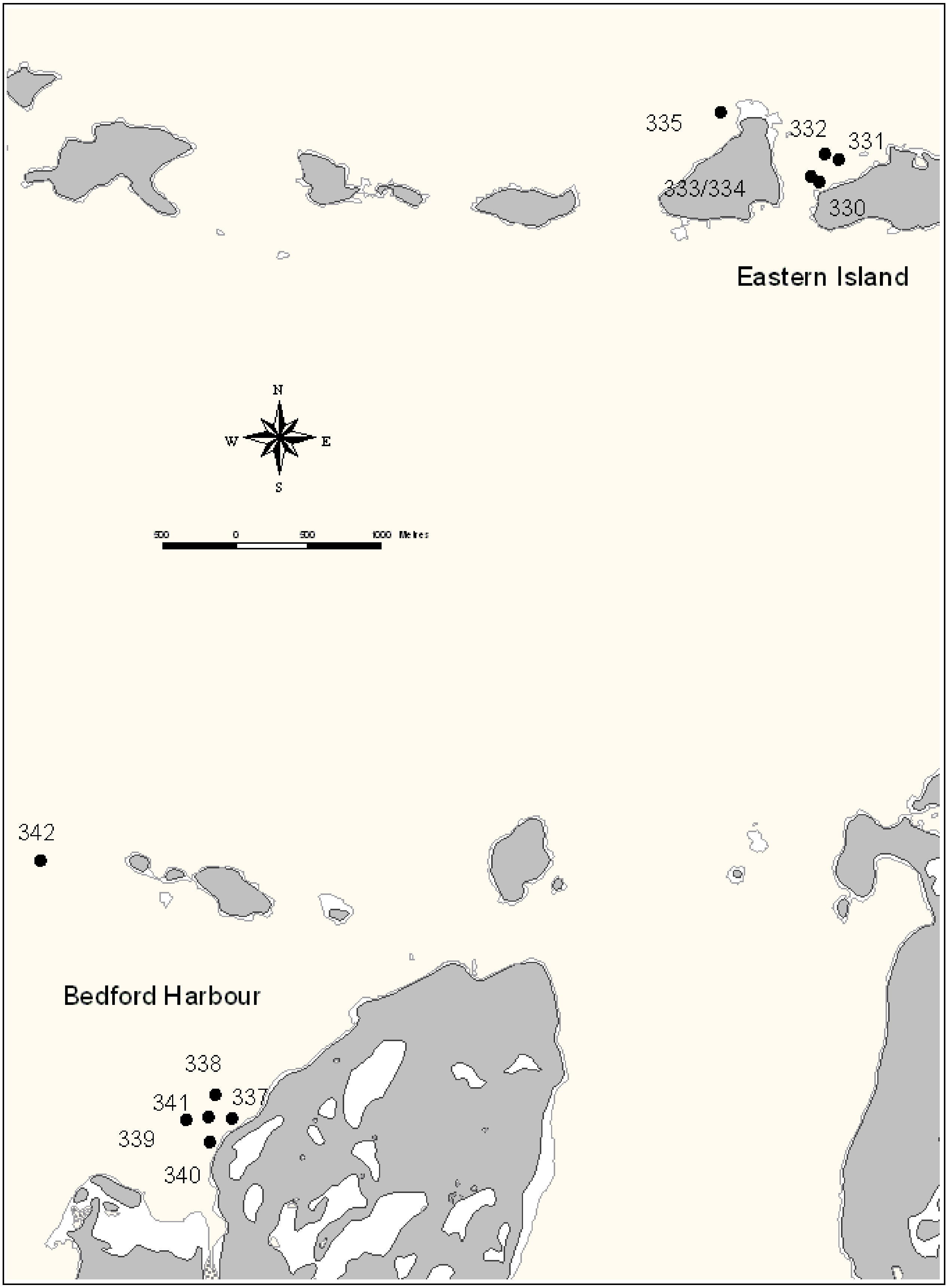


Figure A.2

LaCloche Channel, Eagle Rock, and Fisher Harbour Aquaculture Stations

Figure A.3

Buzwah Aquaculture Stations

Figure A.4

Depot Harbour Aquaculture Stations

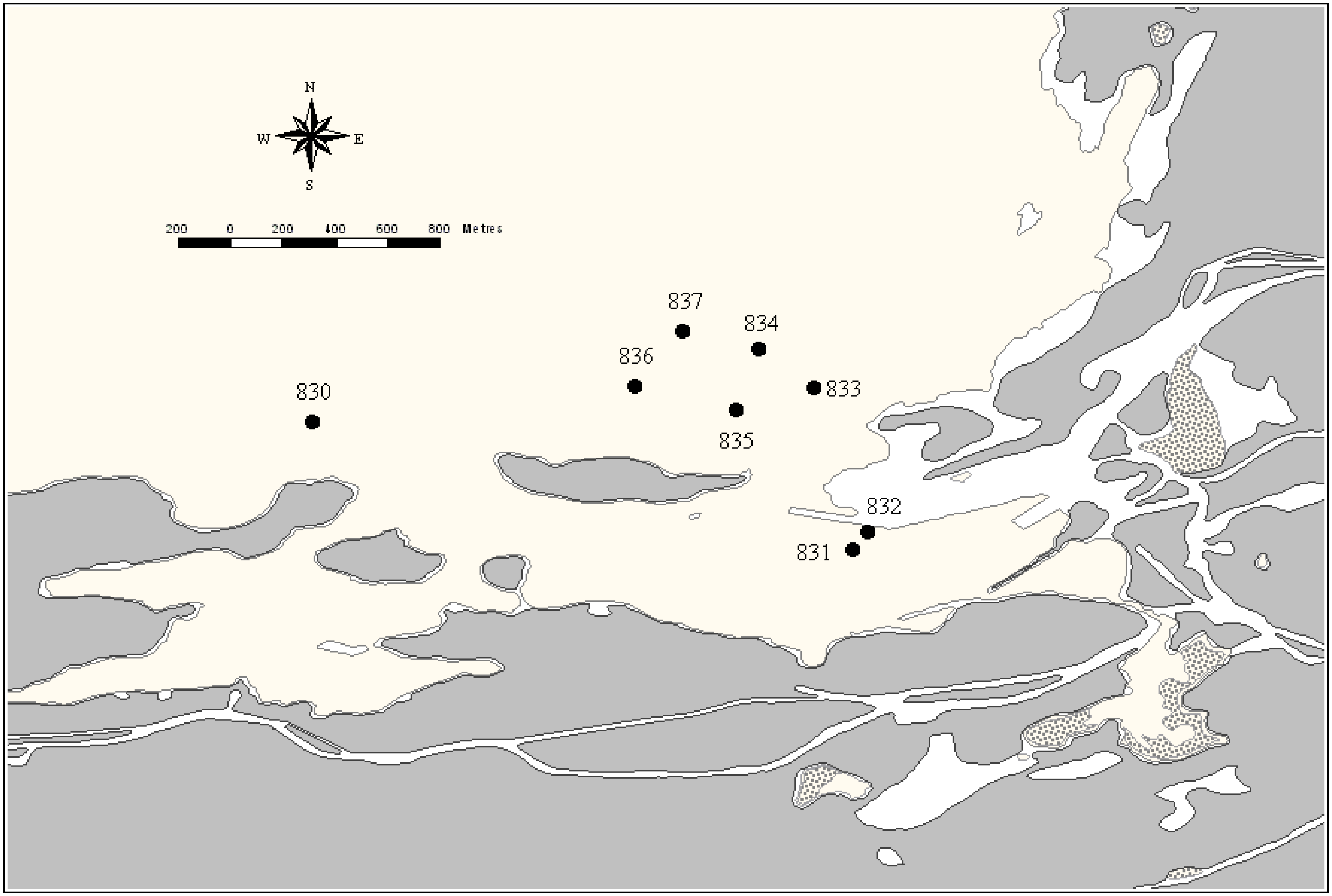
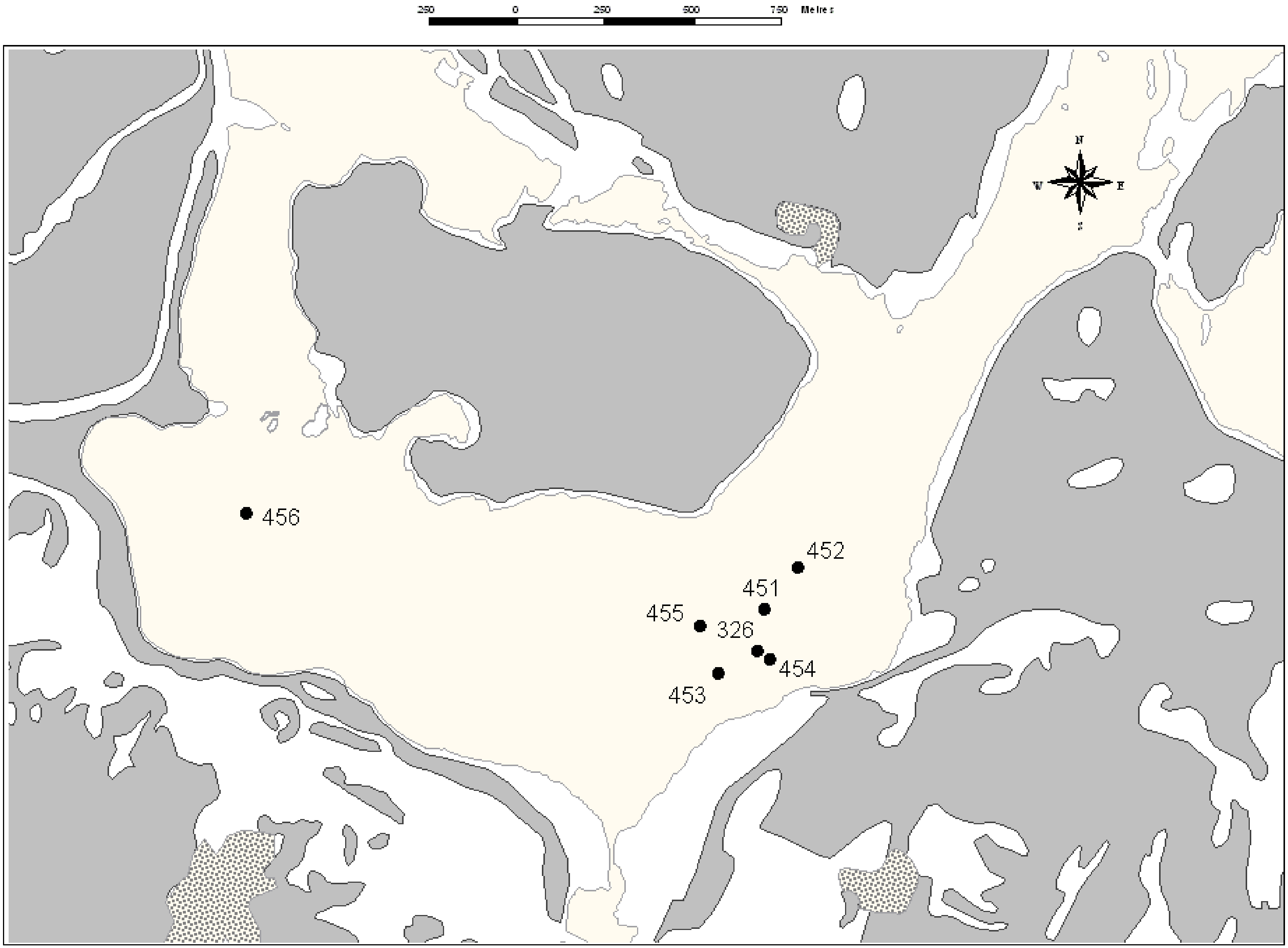


Figure A.5

LaCloche Channel Sediment Sampling Stations



Appendix B

Temperature and Dissolved Oxygen Profiles

Table B.1: Water column profiles at Eagle Island reference site and at each aquaculture site.

Eagle Island Station 311
19-Aug-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.2	19.7	8.7	6	8.7	139
1.8	19.5	8.7	1	8.8	139
3.2	19.4	8.6	1	8.9	139
4.7	19.4	8.5	1	9.0	139
6.7	19.3	8.5	1	9.1	139
6.7	19.3	8.5	1	9.1	139
8.6	19.3	8.5	0	9.2	139
10.2	19.3	8.5	0	9.3	139
12.2	19.0	8.4	0	9.4	139
13.7	16.7	8.3	0	9.3	140
15.3	11.8	8.6	0	9.2	144
16.6	11.2	8.5	0	9.2	144
19.6	10.5	8.6	0	9.3	144
20.6	10.4	8.6	0	9.3	144
22.5	9.7	8.7	0	9.3	145
25.1	9.0	8.8	0	9.3	146

Eagle Island Station 311
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.4	2.9	12.3	0	8.0	177
2.0	2.9	12.1	0	8.0	178
3.6	2.8	12.0	0	8.0	178
4.8	2.8	12.1	0	8.0	178
7.2	2.8	12.1	0	8.1	178
8.4	2.8	12.1	0	8.1	178
9.8	2.8	12.0	0	8.1	178
11.3	2.8	12.1	0	8.1	178
13.5	2.8	12.1	0	8.1	178
15.3	2.8	12.1	0	8.1	178

Bedford Station 336
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
14.2	4.7	12.6	0	8.0	169
13.3	4.7	12.6	0	8.0	169
10.4	5.0	12.6	0	8.0	169
8.8	5.1	12.5	0	8.0	169
8.3	5.1	12.5	0	8.0	169
7.5	5.1	12.5	0	8.0	169
6.3	5.4	12.5	0	8.0	170
3.5	6.1	12.4	0	7.9	169
2.5	7.9	12.2	0	8.0	172
5.8	5.5	12.5	0	8.0	170
4.0	6.3	12.4	0	7.9	170

Bedford Station 336
10-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	18.5	9.0	0	8.4	181
1.7	18.5	9.0	0	8.4	181
3.8	18.4	9.0	0	8.4	181
5.1	18.4	9.0	0	8.4	182
6.3	18.3	9.0	0	8.4	181
7.3	18.4	9.0	0	8.4	181
8.4	18.3	8.9	0	8.4	181
9.9	18.1	8.9	0	8.3	181
11.0	17.8	8.8	0	8.3	181
12.6	17.7	8.9	0	8.3	181
14.3	17.3	8.9	0	8.2	181
15.5	17.2	8.9	0	8.2	181
16.7	16.6	8.8	0	8.1	181
18.0	16.5	8.8	0	8.1	181

Table B.1: continued

Bedford Station 336
11-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	20.1	8.8	1	8.2	196
2.4	20.1	8.8	1	8.3	197
6.2	20.1	8.8	1	8.3	197
7.6	20.1	8.8	1	8.3	197
8.7	20.1	8.8	1	8.3	197
9.6	20.1	8.8	1	8.3	197
10.5	20.1	8.7	1	8.2	197
11.6	20.0	8.7	1	8.2	197
12.7	19.9	8.7	1	8.2	198
13.7	19.4	8.5	1	8.1	198
14.6	17.4	7.5	2	7.8	198
15.7	16.1	7.4	3	7.6	198
16.9	15.6	7.3	2	7.6	197
18.0	15.6	7.3	2	7.6	197
18.7	15.4	7.2	2	7.5	197

Bedford Station 336
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	2.8	12.2	0	7.9	176
1.9	2.8	12.1	0	7.9	176
3.6	2.8	12.2	0	7.9	176
6.3	2.8	12.2	0	8.0	176
9.3	2.8	12.1	0	8.0	177
11.0	2.8	12.1	0	8.0	176
14.3	2.8	12.0	0	8.0	176
16.6	2.8	12.0	0	8.1	176

Bedford Station 337
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	12.9	11.6	0	8.0	173
0.4	12.9	11.7	0	8.0	173
1.5	11.6	11.6	0	8.0	172
2.5	9.6	11.9	0	8.0	172
7.5	6.8	12.3	0	8.0	170
10.0	5.9	12.4	0	8.1	170

Bedford Station 337
10-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	19.0	9.0	0	8.4	182
1.5	19.0	9.0	0	8.4	182
2.2	19.0	8.8	0	8.4	182
3.1	18.8	8.7	0	8.4	181
3.9	18.7	8.7	0	8.4	181
5.0	18.7	8.5	0	8.4	181
6.1	18.7	8.5	0	8.3	181
7.0	18.7	8.5	0	8.4	181
8.2	18.7	8.5	0	8.3	181

Bedford Station 337
20-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	9.1			
1	22.0	9.1			
3	21.5	8.6			
5	21.0	8.2			
7	21.0	7.9			
9	20.0	8.7			
11	19.0	8.7			
12	19.0	8.5			

Bedford Station 337
11-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.4	20.5	8.4	0	8.4	196
1.3	20.5	8.4	0	8.4	197
2.4	20.5	8.4	2	8.4	197
3.8	20.5	8.4	2	8.4	197
5.2	20.5	8.4	2	8.4	197
6.5	20.5	8.3	2	8.4	197
8.2	20.5	8.4	2	8.4	198
9.6	20.5	8.3	1	8.4	198
10.3	20.3	8.3	1	8.3	198

Table B.1: continued

Bedford Station 337
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.3	8.7			
1	17.3	9.5			
3	17.3	9.4			
5	17.2	9.4			
7	17.2	9.4			
9	17.2	9.4			

Bedford Station 337
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	2.9	90.7	176	0.0	8
2.7	2.9	90.0	176	0.0	8
4.1	2.9	90.1	176	0.0	8
6.3	2.9	90.1	175	0.0	8
8.2	2.9	90.3	176	0.0	8
9.8	2.9	90.6	176	0.0	8

Bedford Station 338
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.6	10.0	11.7	0	8.0	172
2.1	9.5	11.9	0	8.0	172
3.2	9.0	12.0	0	8.0	172
4.2	8.5	12.1	0	8.0	171
5.1	8.1	12.2	0	8.0	171

Bedford Station 338
10-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	18.7	8.8	1	8.3	181
2.0	18.7	8.7	0	8.4	181
3.0	18.7	8.7	0	8.3	181
4.1	18.7	8.8	0	8.3	181
5.2	18.7	8.7	0	8.4	181
6.8	18.7	8.6	0	8.4	181
7.8	18.7	8.6	0	8.3	181
8.9	18.6	8.6	0	8.3	181
10.0	18.6	8.4	0	8.3	181
10.5	18.6	8.4	0	8.3	182
11.5	18.6	8.3	0	8.2	182
12.5	18.6	8.2	0	8.2	182
13.1	18.4	8.4	0	8.2	182
14.1	18.3	8.3	0	8.2	181
15.4	15.5	5.2	0	7.5	183
16.1	13.1	0.7	3	7.2	186

Bedford Station 338
20-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	9.2			
1	22.0	9.4			
3	22.0	9.6			
5	21.0	9.0			
7	20.5	8.4			
9	19.5	9.7			
11	19.5	9.7			
13	18.0	8.9			
15	16.5	6.0			
17	13.0	0.5			
18	12.0	0.4			

Table B.1: continued

Bedford Station 338
11-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	20.4	8.4	2	8.4	196
1.8	20.4	8.3	2	8.4	197
3.1	20.4	8.3	2	8.4	197
4.4	20.4	8.3	2	8.4	197
6.2	20.4	8.7	2	8.4	197
7.8	20.4	8.4	2	8.4	198
9.6	20.3	8.1	2	8.3	198
11.0	20.3	8.0	2	8.3	198
11.6	20.2	8.0	2	8.3	198
12.6	19.7	7.2	2	8.0	198
13.4	18.5	6.7	3	7.7	199
14.4	17.4	4.5	3	7.3	198
15.6	16.9	0.5	4	7.0	201
16.1	16.7	0.4	4	6.9	204

Bedford Station 338
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.3	8.7			
1	17.3	9.5			
3	17.2	9.3			
5	17.2	9.4			
7	17.2	9.6			
9	17.2	9.6			
11	17.2	9.7			
13	17.2	9.6			
15	17.2	9.6			
17	17.0	9.2			
18	17.0	8.9			

Bedford Station 338
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.3	2.9	12.2	0	8.1	175
1.7	2.9	12.1	0	8.0	175
4.1	2.9	12.1	0	8.0	176
6.5	2.8	12.2	0	8.1	176
9.3	2.8	12.2	0	8.1	176
11.7	2.8	12.2	0	8.1	176
14.4	2.8	12.2	0	8.1	176
15.7	2.9	12.2	0	8.1	176

Bedford Station 339
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
2.0	10.1	11.6	0	8.0	171
3.7	9.0	11.6	0	7.9	171
5.1	8.1	11.7	0	7.9	170
5.9	7.7	11.8	0	8.0	170
6.3	7.4	11.9	0	8.0	170
6.7	7.2	12.0	0	8.0	170
10.0	5.9	12.4	0	8.1	169
13.1	5.0	12.5	0	8.1	169

Bedford Station 339
01-Jun-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	14.6	10.2			
1	14.4	10.4			
3	14.0	10.6			
5	13.8	10.9			
7	13.8	11.0			
9	12.8	11.1			
11	11.6	11.4			
13	11.2	11.6			
15	10.8	11.6			
17	10.2	11.1			
18	10.2	9.8			

Table B.1: continued

Bedford Station 339
10-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.1	18.7	8.8	0	8.4	181
2.4	18.7	8.7	0	8.4	181
3.8	18.7	8.8	0	8.4	180
5.0	18.7	8.8	0	8.4	180
6.5	18.7	8.6	0	8.4	181
7.7	18.6	8.7	0	8.4	181
9.0	18.7	8.6	0	8.4	181
10.6	18.7	8.7	0	8.4	181
12.1	18.6	8.7	0	8.4	181
14.2	18.2	7.3	0	8.0	182
15.4	14.7	5.3	1	7.7	184
16.6	12.9	0.4	1	7.1	187

Bedford Station 339
20-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	9.1			
1	22.0	9.1			
3	22.0	9.2			
5	21.0	9.4			
7	21.0	8.8			
9	19.5	8.1			
11	19.0	9.5			
13	18.0	8.8			
15	17.0	6.1			
17	17.0	0.6			
18	12.0	0.4			

Bedford Station 339
11-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	20.4	8.1	4	8.3	195
1.6	20.4	8.1	4	8.3	196
2.5	20.4	8.2	3	8.3	196
3.6	20.4	8.2	3	8.3	196
5.2	20.4	8.2	3	8.3	197
6.4	20.3	8.1	3	8.3	197
7.5	20.3	8.2	3	8.3	197
8.5	20.3	8.2	3	8.3	196
9.2	20.2	8.3	3	8.3	197
11.0	20.1	8.3	3	8.4	197
12.2	19.7	7.5	2	8.1	197
13.0	18.5	6.5	3	7.8	197
13.5	17.7	5.7	3	7.5	197
14.3	17.4	4.9	3	7.4	197
14.7	17.3	4.5	3	7.4	197
15.5	17.2	3.5	4	7.2	198
16.0	17.0	2.8	4	7.2	198

Bedford Station 339
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.3	8.4			
1	17.3	9.4			
3	17.3	9.3			
5	17.3	9.3			
7	17.2	9.4			
9	17.2	9.5			
11	17.2	9.4			
13	17.1	9.2			
15	17.1	9.1			
17	17.0	8.9			

Table B.1: continued

Bedford Station 339
08-Nov-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb(NTU)	pH	Cond (uS/cm)
0.4	8.7	10.7	0	8.2	164
1.7	8.7	10.5	0	8.2	164
3.4	8.7	10.6	0	8.1	164
5.5	8.7	10.5	0	8.1	165
7.6	8.7	10.7	0	8.1	166
10.2	8.7	10.7	0	8.0	165
12.0	8.7	10.7	0	8.0	165
14.1	8.6	10.6	0	8.0	166
16.0	8.6	10.5	0	7.9	166

Bedford Station 339
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.3	2.9	12.3	0	8.0	176
1.7	2.9	12.0	0	8.0	176
5.0	2.8	12.1	0	8.1	176
7.4	2.8	12.2	0	8.1	176
9.3	2.8	12.1	0	8.1	176
11.6	2.8	12.1	0	8.1	176
14.2	2.8	12.2	0	8.1	176
15.8	2.8	12.1	0	8.1	176

Bedford Station 340
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.8	11.1	11.4	0	7.9	172
2.8	10.0	11.6	0	8.0	172
3.3	9.4	11.8	0	8.0	172
4.3	8.7	11.8	0	8.0	171
5.0	8.3	11.8	0	8.0	171
7.4	7.1	12.3	0	8.1	170
8.3	6.8	12.3	0	8.1	170
10.0	6.1	12.3	0	8.1	169
10.5	6.0	12.3	0	8.1	169

Bedford Station 340
20-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	9.1			
1	22.0	8.9			
3	22.0	9.2			
5	21.5	9.4			
7	21.0	9.5			
9	20.0	8.8			
11	19.0	8.8			
13	18.0	8.7			
15	17.0	4.2			
17	14.0	0.3			

Bedford Station 340
11-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	20.4	8.1	1	8.3	196
1.8	20.4	8.1	1	8.3	196
2.9	20.4	8.1	2	8.3	197
3.9	20.4	8.1	2	8.3	197
5.5	20.4	8.1	2	8.3	197
6.8	20.3	8.0	2	8.3	197
8.0	20.3	7.9	2	8.2	197
9.1	20.4	8.0	2	8.3	197
10.2	20.3	8.0	2	8.2	197
10.8	20.2	7.9	2	8.2	197
11.2	20.2	7.9	2	8.2	198

Bedford Station 340
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.3	8.9			
1	17.4	9.4			
3	17.3	9.5			
5	17.3	9.5			
7	17.3	9.4			
9	17.2	9.5			
11	17.1	9.4			
13	17.1	9.3			
15	17.0	9.2			
17	17.0	9.1			

Table B.1: continued

Bedford Station 340
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.3	2.9	12.2	0	8.1	176
1.6	2.9	12.1	0	8.1	176
3.9	2.9	12.0	0	8.1	176
5.9	2.9	12.1	0	8.1	176
8.7	2.9	12.1	0	8.1	175
12.0	2.9	12.1	0	8.1	176
13.5	2.9	12.1	0	8.1	175

Bedford Station 342
01-Jun-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.8	10.2			
1	13.8	10.6			
3	13.6	10.8			
5	13.6	10.8			
7	13.4	10.9			
9	13.2	10.9			
11	12.1	11.0			
13	10.8	11.2			
15	10.5	11.4			
17	10.2	11.4			
19	10.0	11.4			
21	9.8	11.3			
23	9.8	11.3			
25	9.8	11.4			
27	9.8	11.4			
29	9.7	11.4			

Bedford Station 342
20-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	8.9			
1	22.0	9.1			
3	22.0	9.2			
5	21.5	9.4			
7	20.0	9.6			
9	19.0	9.6			
11	19.0	9.4			
13	18.0	9.4			
15	18.0	9.4			
17	17.0	9.4			
19	16.0	9.4			

Bedford Station 342
11-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	20.5	8.3	1	8.3	197
2.0	20.5	8.3	1	8.4	197
3.9	20.5	8.3	1	8.3	197
5.0	20.5	8.3	1	8.3	197
6.0	20.5	8.3	1	8.3	197
9.0	20.5	8.3	1	8.3	197
10.4	20.5	8.3	1	8.3	197
11.5	20.5	8.3	1	8.3	197
13.1	20.4	8.2	1	8.3	198
14.0	20.3	8.1	2	8.3	198
14.9	19.9	8.0	4	8.2	198

Table B.1: continued

Bedford Station 342
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.2	9.1			
1	17.2	9.6			
3	17.2	9.5			
5	17.2	9.5			
7	17.2	9.5			
9	17.2	9.4			
11	17.2	9.4			
13	17.2	9.4			
15	17.2	9.4			
17	17.1	9.3			
19	17.0	9.2			
21	16.8	8.9			

Bedford Profile 1 (46 01.8767 Lat. -82 00.2217 Long.)
10-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	18.8	8.7	1	8.3	181
1.9	18.8	8.6	0	8.3	181
2.8	18.8	8.6	0	8.3	181
3.6	18.7	8.5	0	8.3	181
4.9	18.7	8.5	0	8.3	181
5.7	18.7	8.5	0	8.3	182
7.1	18.7	8.6	0	8.3	181
8.2	18.7	8.5	0	8.3	181
9.5	18.7	8.5	0	8.3	181
10.7	18.7	8.5	0	8.3	182
12.0	18.7	8.4	0	8.3	182
13.0	18.6	8.4	0	8.3	181
14.2	18.6	8.2	0	8.2	182
15.0	18.5	8.3	0	8.2	182
15.7	14.3	2.3	0	7.3	185
16.5	13.2	0.6	1	7.1	186
17.0	12.5	0.1	0	6.9	194

Bedford Profile 2 (46 01.8750 Lat., -82 00.3600 Long.)
10-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	18.8	8.7	0	8.3	182
2.2	18.8	8.5	0	8.3	181
3.6	18.8	8.5	0	8.3	182
5.0	18.8	8.6	0	8.3	182
6.1	18.8	8.5	0	8.3	181
7.4	18.7	8.5	0	8.4	181
8.5	18.7	8.7	0	8.4	181
9.7	18.7	8.6	0	8.4	181
11.1	18.7	8.6	0	8.4	181
12.3	18.7	8.6	0	8.4	182
13.7	18.6	8.5	0	8.3	182
14.7	17.8	7.1	0	7.8	182
15.4	15.5	4.2	0	7.4	184
16.0	13.4	1.2	1	7.2	186
16.6	13.0	0.5	1	7.1	187
17.0	12.7	0.2	0	7.0	189

Bedford Profile 3 (46 02.0650 Lat., -82 00.3633 Long.)
10-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	18.7	8.6	0	8.3	181
2.1	18.7	8.5	0	8.3	181
3.0	18.7	8.6	0	8.3	181
4.0	18.7	8.6	0	8.3	180
5.1	18.8	8.6	0	8.3	181
6.2	18.7	8.6	0	8.3	181
7.2	18.7	8.5	0	8.3	181
8.4	18.7	8.6	0	8.3	181
9.4	18.6	8.5	0	8.3	181
10.4	18.6	8.6	0	8.3	181
11.4	18.6	8.6	0	8.3	181
12.5	18.6	8.6	0	8.3	181
13.4	18.6	8.4	0	8.2	181
14.5	17.7	7.8	0	8.0	182
15.5	16.0	5.9	0	7.6	184

Table B.1: continued

Eastern Station 330
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	7.0	11.8	0	7.9	162
1.5	6.9	11.7	0	7.9	162
2.5	6.8	11.6	0	7.8	162
4.7	6.4	11.6	0	7.8	163
5.0	6.3	11.4	0	7.8	163
7.6	5.6	11.8	0	7.9	164
10.1	5.2	12.2	0	8.0	165
11.5	5.1	12.2	0	8.0	164
12.5	5.0	12.2	0	8.0	164
13.5	5.0	12.2	0	8.0	164

Eastern Station 330
11-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.9	19.2	8.2	0	8.2	183
2.0	19.2	8.1	0	8.2	183
3.0	19.2	8.0	0	8.2	183
4.2	19.2	8.1	0	8.2	183
5.4	19.1	8.2	0	8.2	183
6.0	19.1	8.0	0	8.2	183
7.9	19.1	7.6	0	8.0	183
9.8	19.0	7.5	0	7.9	184
12.3	19.0	7.3	0	7.9	184
14.0	18.9	7.5	0	7.9	184
17.4	18.8	7.2	0	7.0	184
17.9	18.5	6.6	6	6.6	189
18.3	18.1	5.1	0	4.9	3705
18.4	17.8	2.8	0	4.8	297

Eastern Station 330
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	9.4			
1	22.0	9.4			
3	21.5	9.3			
5	21.0	8.3			
7	20.5	8.4			
9	20.0	8.7			
11	20.0	9.0			
13	19.0	9.6			
15	18.5	9.0			
17	18.0	1.1			

Eastern Station 330
12-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.2	19.9	8.2	1	8.0	196
2.1	19.8	8.1	1	8.0	196
3.2	19.7	7.7	1	7.9	196
4.6	19.6	8.1	1	7.9	196
6.4	19.6	8.2	1	8.0	196
7.9	19.5	8.2	1	8.0	196
9.6	19.5	8.1	1	7.9	196
11.3	19.4	8.2	1	7.9	196
12.4	19.4	8.2	1	7.9	196
13.5	19.4	8.2	2	7.9	196
14.5	19.3	8.0	2	7.9	196
16.0	18.8	6.5	4	7.5	197
16.9	16.3	0.4	3	6.9	202

Eastern Station 330
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.5	7.8			
1	17.5	8.9			
3	17.4	9.2			
5	17.3	9.4			
7	17.3	9.5			
9	17.3	9.5			
11	17.2	9.1			
13	17.2	8.9			
15	17.1	8.9			
17	17.1	7.0			

Table B.1: continued

Eastern Station 330
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.4	2.8	11.9	0	8.0	173
1.5	2.8	12.0	0	8.0	172
3.2	2.8	11.9	0	8.0	173
5.3	2.8	12.3	0	8.0	173
8.2	2.8	11.9	0	8.0	173
10.2	2.8	11.8	0	8.0	173
12.8	2.8	11.9	0	8.0	173
16.0	2.9	11.9	0	8.0	172
17.6	2.9	11.9	0	8.0	172

Eastern Station 331
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	6.9	11.9	0	8.0	161
1.5	6.9	12.0	0	8.0	161
3.1	6.7	11.9	0	8.0	162
5.3	6.0	11.2	0	7.8	163
7.0	5.9	11.3	0	7.8	163
9.0	5.5	11.9	0	8.0	163
11.1	5.3	12.0	0	8.0	163
13.1	5.1	12.1	0	8.0	164

Eastern Station 331
11-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.2	19.2	8.1	0	8.2	183
2.3	19.2	8.1	0	8.2	182
4.0	19.1	8.1	0	8.2	182
5.6	19.1	8.0	0	8.2	182
7.1	19.1	7.9	0	8.1	183
8.8	19.1	7.7	0	8.1	183
10.0	19.1	7.5	0	8.0	183
11.4	19.1	7.5	0	8.0	183
12.8	19.1	7.6	0	8.0	183
13.7	19.0	7.6	0	8.0	183
14.4	19.0	7.5	0	8.0	183
15.3	18.9	7.4	0	8.0	183
16.6	18.9	7.5	0	7.9	183
17.7	18.7	6.8	0	7.6	186

Eastern Station 331
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	9.0			
1	22.0	9.0			
3	21.5	8.9			
5	21.0	8.6			
7	20.5	8.6			
9	20.0	8.6			
11	20.0	8.7			
13	19.0	9.0			
14.5	18.5	6.8			

Eastern Station 331
12-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.2	19.8	8.0	2	8.0	196
2.2	19.7	8.3	2	8.0	196
3.4	19.6	8.4	2	8.1	196
4.6	19.6	8.4	2	8.1	196
5.8	19.6	8.5	1	8.1	196
7.0	19.6	8.5	1	8.1	196
8.2	19.5	8.5	1	8.1	196
9.3	19.5	8.5	1	8.1	197
10.9	19.5	8.3	1	8.1	197
12.4	19.5	8.4	1	8.1	197
13.4	19.5	8.4	1	8.1	197
14.9	19.4	8.3	1	8.0	197
16.0	19.1	7.4	1	7.9	197
16.5	17.6	4.5	3	7.3	199
17.0	16.4	0.4	3	7.0	204
17.7	15.8	0.4	4	6.9	214

Table B.1 continued

Eastern Station 331
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.4	8.1			
1	17.4	9.1			
3	17.3	9.5			
5	17.3	9.6			
7	17.2	9.6			
9	17.2	9.7			
11	17.2	9.7			
13	17.2	9.4			
15	17.2	9.1			

Eastern Station 331
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.3	2.8	12.3	0	8.0	173
1.7	2.8	12.1	0	8.0	173
4.1	2.8	12.0	0	8.0	173
6.1	2.8	12.1	0	8.0	173
8.1	2.8	12.0	0	8.0	173
11.2	2.8	12.0	0	8.0	173
14.8	2.9	12.0	0	8.0	172
16.5	2.9	12.0	0	8.0	172

Eastern Station 332
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	7.1	12.1	0	8.0	161
1.6	7.1	12.0	0	8.0	161
2.5	6.6	11.6	0	7.9	163
5.1	6.2	11.4	0	7.8	164
7.6	5.7	11.7	0	7.9	164
10.0	5.2	12.2	0	8.0	164
12.5	5.0	12.3	0	8.0	164
15.0	4.8	12.2	0	7.9	166
16.0	4.8	12.2	0	8.0	166
17.0	4.8	12.1	0	8.0	166

Eastern Station 332
11-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.9	19.2	8.0	0	8.1	184
2.4	19.2	7.9	0	8.1	183
3.3	19.1	8.0	0	8.2	183
4.5	19.1	8.3	0	8.3	183
5.8	19.1	8.2	0	8.3	183
7.1	19.1	8.0	0	8.2	184
8.4	19.1	7.9	0	8.2	183
10.3	19.0	7.8	0	8.1	184
12.1	19.0	7.7	0	8.1	184
13.8	18.9	7.9	0	8.1	184
15.2	18.9	7.8	0	8.1	184

Eastern Station 332
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	23.0	9.4			
1	22.0	9.6			
3	21.5	9.8			
5	21.0	10.0			
7	20.5	10.0			
9	20.5	9.8			
11	20.0	9.4			
13	19.0	9.5			
15	18.5	8.7			
16	18.0	2.3			

Eastern Station 332
12-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	19.8	8.2	1	8.0	195
1.8	19.7	8.5	1	8.1	195
2.8	19.7	8.5	1	8.1	195
4.2	19.6	8.6	1	8.1	195
5.7	19.6	8.5	1	8.1	195
8.3	19.5	8.5	1	8.1	195
10.2	19.5	8.5	1	8.1	195
11.8	19.5	8.5	1	8.1	195
13.3	19.5	8.3	2	8.0	195
14.3	19.3	8.2	2	7.9	196

Table B.1: continued

Eastern Station 332
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.6	9.0			
1	17.6	9.5			
3	17.5	9.3			
5	17.4	9.2			
7	17.3	9.3			
9	17.2	9.0			
11	17.2	9.1			
13	17.2	9.2			
15	17.2	9.0			

Eastern Station 332
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	2.7	12.0	0	8.0	173
4.0	2.7	12.0	0	8.0	173
7.0	2.7	12.0	0	8.0	173
9.9	2.7	12.1	0	8.0	173
11.4	2.7	12.0	0	8.0	173

Eastern Station 333
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	7.2	11.7	0	7.9	161
1.5	6.9	11.8	0	8.0	162
2.5	6.8	11.8	0	7.9	163
5.0	6.4	11.7	0	7.9	163
7.5	5.6	12.0	0	8.0	165
10.0	5.0	12.2	0	8.0	165
12.5	4.9	12.2	0	8.0	165
15.0	4.9	12.3	0	8.0	165
17.5	4.7	12.0	0	7.9	166
18.5	4.7	12.0	0	7.9	167

Eastern Station 333
01-Jun-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	14.4	10.2			
1	14.3	10.4			
3	14.3	10.4			
5	14.3	10.4			
7	14.2	10.4			
9	13.8	10.5			
11	10.4	10.9			
13	10.3	11.3			
15	10.0	11.3			
17	10.0	11.2			
19	9.9	11.0			

Eastern Station 333
11-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.1	19.3	7.7	0	8.0	184
2.7	19.2	7.5	0	8.0	183
4.1	19.1	7.3	0	7.9	184
5.2	19.1	7.3	0	7.9	184
7.3	19.1	7.2	0	7.9	184
8.6	19.1	7.0	0	7.8	184
10.4	19.1	7.1	0	7.8	184
11.7	19.0	7.2	0	7.8	184
12.9	19.0	7.3	0	7.9	184
14.3	18.9	7.7	0	8.0	184
15.6	18.8	7.9	0	8.1	183
16.3	18.8	8.1	0	8.1	184

Table B.1: continued

Eastern Station 333
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	10.1			
1	22.0	10.0			
3	21.0	10.0			
5	21.0	10.0			
7	21.0	10.0			
9	21.0	10.0			
11	20.0	9.5			
13	19.5	10.1			
15	19.0	9.2			
17	18.0	0.3			
18	18.0	0.3			

Eastern Station 333
12-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.9	19.9	8.3	2	8.1	195
2.5	19.7	8.4	2	8.1	195
3.9	19.6	8.5	2	8.1	195
5.5	19.6	8.5	1	8.1	195
6.9	19.5	8.5	1	8.1	195
8.1	19.5	8.5	1	8.1	195
9.6	19.5	8.5	1	8.1	195
11.0	19.5	8.4	1	8.1	195
12.4	19.4	8.2	2	8.0	195
13.4	19.4	8.3	2	8.0	195
14.0	19.4	8.2	4	8.0	196

Eastern Station 333
18-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.4	2.7	12.1	0	8.1	173
2.0	2.7	12.0	0	8.1	173
3.1	2.7	12.1	0	8.1	173
5.9	2.7	12.1	0	8.1	173
9.3	2.7	12.1	0	8.1	173
11.8	2.7	12.1	0	8.1	173
13.4	2.7	12.1	0	8.1	173
14.6	2.7	12.1	0	8.1	173

Eastern Station 334
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	7.2	11.9	0	8.0	163
1.5	7.0	11.9	0	8.0	163
2.5	7.0	11.9	0	8.1	162
5.0	6.3	11.8	0	8.0	164
7.5	5.7	12.2	0	8.1	166
10.0	5.1	12.2	0	8.0	164
12.6	4.9	12.2	0	8.0	165
15.0	4.8	12.2	0	7.9	167
16.0	4.8	12.1	0	7.9	167
17.0	4.7	12.1	0	8.0	167

Eastern Station 334
11-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.5	19.2	8.2	0	8.1	184
2.6	19.1	8.1	0	8.2	184
4.0	19.1	8.7	0	8.1	184
5.4	19.1	7.5	0	8.0	184
7.1	19.1	7.3	0	8.0	184
8.3	19.1	7.0	0	7.9	184
9.9	19.1	7.2	0	7.9	185
11.0	19.0	7.3	0	7.9	184
12.8	19.0	7.2	0	8.0	184
14.1	19.0	7.1	0	7.9	184
15.4	18.9	7.5	0	8.0	184
17.0	18.8	7.7	0	8.1	183
18.1	18.8	7.9	0	8.1	184

Table B.1: continued

Eastern Station 334
12-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	19.6	8.2	1	7.9	196
2.4	19.6	8.5	1	8.0	196
3.6	19.6	8.5	1	8.1	196
5.3	19.6	8.5	1	8.1	196
6.6	19.6	8.5	1	8.1	196
8.7	19.5	8.5	1	8.1	197
9.9	19.5	8.5	1	8.1	197
11.3	19.5	8.5	1	8.1	197
12.4	19.5	8.4	1	8.1	197
13.5	19.4	8.4	1	8.0	197
14.7	19.4	8.3	1	8.0	197
15.7	19.2	8.0	2	7.9	197
16.2	18.7	6.4	2	7.7	198
17.5	15.6	0.4	5	6.7	227

Eastern Station 334
08-Nov-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb(NTU)	pH	Cond (uS/cm)
0.5	8.7	10.0	0	7.9	165
1.0	8.7	9.9	0	7.9	165
2.0	8.7	9.8	0	7.9	165
4.0	8.7	9.9	0	7.9	165
6.0	8.6	9.9	0	7.9	164
8.0	8.6	10.2	0	8.0	164
9.9	8.6	10.3	0	7.9	165
12.0	8.6	10.3	0	7.9	164
14.0	8.6	10.3	0	7.9	164
16.0	8.6	10.5	0	8.0	165
17.5	8.6	10.4	0	7.9	165

Eastern Station 335
02-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	7.8	12.2	0	7.9	162
1.5	6.9	12.2	0	8.0	162
2.5	6.0	12.4	0	8.0	162
5.0	5.4	12.5	0	8.0	162
7.5	5.2	12.5	0	8.0	164
10.0	4.9	12.4	0	8.0	165
12.5	4.8	12.4	0	8.0	166
14.1	4.8	12.4	0	8.0	165
15.0	4.7	12.4	0	8.0	166

Eastern Station 335
01-Jun-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	14.3	10.5			
1	14.3	10.5			
3	14.3	10.5			
5	14.3	10.5			
7	13.8	10.6			
9	11.4	11.0			
11	11.2	11.0			
13	10.8	11.1			
15	10.4	11.2			
17	10.2	11.2			
19	9.8	11.2			

Table B.1: continued

Eastern Station 335
11-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	19.0	8.8	3	8.3	183
1.4	19.0	8.7	0	8.3	183
2.2	19.0	8.6	0	8.3	183
3.3	19.0	8.6	0	8.3	183
4.4	19.0	8.6	0	8.3	183
5.8	19.0	8.5	0	8.3	183
7.2	19.0	8.6	0	8.3	183
8.4	19.0	8.6	0	8.3	183
9.4	19.0	8.5	0	8.3	183
11.0	19.0	8.6	0	8.3	183
12.2	19.0	8.4	0	8.3	184
13.3	18.9	8.4	0	8.3	183
14.7	18.8	8.3	0	8.2	183
15.9	18.7	8.3	0	8.2	184

Eastern Station 335
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	22.0	9.2			
1	22.0	9.2			
3	22.0	9.2			
5	22.0	9.3			
7	22.0	9.3			
9	20.0	9.5			
11	20.0	9.4			
13	19.0	9.3			
15	18.5	9.1			
18	18.0	8.4			

Eastern Station 335
12-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	20.0	8.7	2	8.2	196
1.7	19.9	8.7	2	8.2	196
3.2	19.8	8.6	2	8.2	196
4.7	19.7	8.6	1	8.2	196
5.9	19.6	8.6	2	8.1	196
7.5	19.6	8.6	1	8.1	196
8.8	19.6	8.6	1	8.1	196
10.3	19.5	8.6	1	8.1	197
11.4	19.5	8.6	1	8.1	197
12.5	19.5	8.6	1	8.1	197
13.2	19.5	8.6	1	8.1	197
13.9	19.5	8.5	1	8.1	197
15.0	19.5	8.5	1	8.1	197

Eastern Station 335
27-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	17.6	9.2			
1	17.6	9.8			
3	17.4	9.9			
5	17.4	10.0			
7	17.4	10.0			
9	17.4	10.0			
11	17.4	10.0			
13	17.3	9.9			
15	17.3	9.8			
17	17.2	9.8			
19	17.1	9.7			

Table B.1: continued

LaCloche Station 326
04-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	12.7	11.2	0	8.1	171
1.7	12.1	11.4	0	8.1	170
2.5	11.0	11.6	0	8.1	169
5.0	8.9	12.1	0	8.2	169
7.5	7.8	12.3	0	8.2	168
12.5	7.0	12.0	0	8.1	169
15.3	6.9	11.9	0	8.0	168
17.5	6.8	11.7	0	7.9	169
20.0	6.7	11.5	0	7.9	169
22.5	6.6	11.4	0	7.8	169
25.0	6.6	11.3	0	7.8	169
27.5	6.5	11.3	0	7.8	169
30.1	6.5	11.3	0	7.8	169
32.5	6.4	10.9	0	7.7	169

LaCloche Station 326
26-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	14.5	10.6			
1	14.5	10.6			
3	14.5	10.6			
5	14.5	10.6			
7	14.5	10.7			
9	14.5	10.6			
11	10.7	12.6			
13	9.3	12.4			
15	9.0	11.8			
17	8.8	11.6			
19	8.5	11.2			
21	8.3	11.0			
23	8.2	10.6			
25	8.0	10.4			
27	8.0	10.2			
29	8.0	10.2			
31	8.0	10.0			
33	8.0	9.8			

LaCloche Station 326
14-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	20.5	8.6	0	8.4	183
2.3	20.5	8.5	0	8.4	183
3.8	20.2	8.6	0	8.4	184
5.5	19.7	8.6	0	8.3	183
7.5	19.1	8.6	0	8.3	188
9.2	18.4	8.6	0	8.2	187
10.4	17.3	8.5	0	8.0	186
12.0	12.2	8.9	0	7.7	184
13.9	9.6	7.8	0	7.5	183
15.6	8.9	7.0	0	7.4	182
17.7	8.2	6.3	0	7.4	182
19.1	8.0	6.0	0	7.3	182
19.9	7.8	5.9	0	7.3	182
21.0	7.7	5.6	0	7.3	182
22.0	7.6	5.3	0	7.2	182
23.2	7.5	5.2	0	7.2	182
24.0	7.5	5.1	0	7.2	182
25.1	7.4	4.9	0	7.2	182
27.2	7.4	4.9	0	7.2	182
29.1	7.4	4.8	0	7.2	182
31.1	7.3	4.8	0	7.2	182
33.3	7.3	4.6	0	7.2	182
34.0	7.3	4.4	0	7.2	182
35.0	7.3	4.3	0	7.2	182

LaCloche Station 326
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	23.0	9.5			
1	22.5	9.5			
3	22.0	9.6			
5	20.0	10.4			
7	19.0	10.2			
9	18.0	9.7			
11	14.0	10.8			
13	10.0	9.3			
15	8.0	7.8			
17	7.0	6.0			
19	7.0	5.5			
20	7.0	3.6			

Table B.1: continued

LaCloche Station 326
13-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.4	20.6	8.8	0	8.4	189
1.4	20.6	8.8	4	8.4	189
2.1	20.6	8.8	4	8.4	189
2.9	20.6	8.8	4	8.4	189
4.1	20.6	8.9	4	8.4	189
5.9	20.6	8.9	4	8.4	189
7.6	20.5	8.9	3	8.4	189
8.9	20.5	8.9	3	8.4	189
10.1	20.5	8.8	3	8.4	189
11.0	18.1	6.0	3	7.6	193
12.3	13.4	2.8	3	7.2	192
13.1	11.7	1.3	4	7.1	192
14.7	10.0	0.9	3	7.0	191
16.3	9.1	0.7	3	7.0	190
17.2	8.4	0.8	3	7.0	189
18.4	8.1	0.7	3	6.9	189
20.1	7.6	0.4	3	6.9	189
21.2	7.5	0.3	2	6.9	189
22.0	7.4	0.3	2	6.9	189
23.1	7.4	0.3	2	6.9	189
24.7	7.3	0.3	1	6.9	189
25.0	7.4	0.3	1	6.9	189
28.4	7.3	0.3	3	6.9	190

LaCloche Station 326
06-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.5	9.2			
1	13.7	8.5			
3	14.3	8.8			
5	13.7	9.2			
7	13.7	9.5			
9	13.8	9.6			
11	13.8	9.5			
13	13.5	9.5			
14	13.5	8.5			

LaCloche Station 326
09-Nov-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb(NTU)	pH	Cond (uS/cm)
0.4	7.8	11.0	0	7.9	157
2.5	7.8	11.0	0	7.9	157
6.3	7.8	11.3	0	7.9	156
9.0	7.7	11.3	0	7.9	157
10.3	7.7	11.4	0	7.9	156
13.0	7.7	10.9	0	7.9	156
13.9	7.7	11.0	0	7.9	157
19.9	7.7	10.8	0	7.9	156
22.9	7.7	10.6	0	7.8	157
23.5	7.7	10.6	0	7.8	157
31.0	7.6	10.7	0	7.8	156
33.4	7.6	10.5	0	7.8	156
36.5	7.6	9.4	0	7.5	158
36.9	7.6	0.5	0	7.1	266

LaCloche Channel 326
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	4.8	11.4	0	8.0	174
2.0	4.7	11.3	0	8.0	174
4.3	4.7	11.3	0	8.0	174
6.2	4.7	11.3	0	8.1	174
8.3	4.7	11.3	0	8.1	174
10.5	4.7	11.3	0	8.1	174
12.5	4.7	11.3	0	8.1	174
14.5	4.7	11.3	0	8.1	174
16.4	4.7	11.3	0	8.1	174
18.7	4.5	11.2	0	8.1	174
20.9	4.5	11.2	0	8.1	174
23.1	4.5	11.2	0	8.1	174
25.5	4.5	11.2	0	8.1	174
27.9	4.5	11.2	0	8.1	174
29.3	4.5	11.2	0	8.1	174
30.5	4.5	11.2	0	8.1	174

Table B.1: continued

LaCloche Station 2
26-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	14.5	10.2			
1	14.5	10.1			
3	14.4	10.2			
5	14.5	10.3			
7	14.5	10.2			
9	14.5	10.2			
11	10.5	12.4			
13	9.5	12.0			
15	9.2	11.4			
17	8.9	11.2			
19	8.5	10.8			
21	8.5	10.5			
23	8.5	10.3			
25	8.4	10.0			
27	8.3	9.5			
29	8.3	9.5			
31	8.2	9.3			
33	8.2	9.2			
35	8.2	9.0			
37	8.1	9.0			
39	8.2	8.4			
41	8.0	6.0			

LaCloche Station 2
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	23.0	9.0			
1	23.0	9.0			
3	22.5	9.2			
5	20.0	9.6			
7	19.0	9.6			
9	18.5	9.6			
11	14.5	10.1			
13	10.0	9.4			
15	8.0	6.3			
17	7.0	5.7			
19	7.0	5.4			
21	7.0	5.1			
23	6.5	4.9			
25	6.5	4.6			
27	6.0	4.4			
29	6.0	4.3			
31	6.0	4.2			
33	6.0	4.0			
35	6.0	4.0			
37	6.0	3.7			
39	6.0	3.4			
41	6.0	2.8			
42	6.0	2.2			

Table B.1: continued

LaCloche Station 2
16-Aug-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	19.9	9.6			
1	19.9	9.6			
3	19.9	9.7			
5	19.9	9.7			
7	19.7	9.5			
9	18.3	9.3			
11	16.7	9.1			
13	11.2	5.6			
15	9.6	4.5			
17	8.2	2.9			
19	7.8	2.8			
21	7.1	2.3			
23	7.0	2.0			
25	7.0	1.8			
27	6.9	1.6			
29	6.9	1.5			
31	6.9	1.3			
33	6.8	1.0			
35	6.8	0.6			
36	6.7	0.3			

LaCloche Station 2
06-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.5	9.5			
1	13.5	9.9			
3	13.5	11.5			
5	13.5	12.0			
7	13.5	12.0			
9	13.8	11.5			
11	13.7	10.8			
13	13.5	10.5			
15	13.5	10.3			
17	9.2	2.5			
19	7.8	1.7			
21	7.7	1.1			
23	7.4	1.1			
25	7.3	1.1			
27	7.2	1.0			
29	7.2	1.0			
30	7.2	0.9			

LaCloche Station 7
26-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	14.2	10.2			
1	14.3	10.2			
3	14.2	10.2			
5	14.2	10.2			
7	14.1	10.2			
9	11.9	11.8			
11	10.5	12.5			
13	9.5	12.6			
15	8.2	12.2			
17	7.8	11.0			
19	7.4	10.0			
21	7.3	9.5			
23	7.1	9.0			
24	7.0	8.4			

Table B.1: continued

LaCloche Station 7
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	23.5	9.0			
1	23.0	9.0			
3	21.5	9.8			
5	20.0	10.2			
7	19.0	9.6			
9	17.5	9.5			
11	14.0	9.8			
13	8.5	8.5			
15	6.0	6.8			
17	4.5	5.2			
19	4.0	3.5			
21	4.0	2.5			

LaCloche Station 7
06-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.5	9.8			
1	13.5	10.3			
3	13.5	11.5			
5	13.5	12.1			
7	13.6	12.4			
9	13.6	12.3			
11	13.6	12.3			
13	13.5	11.7			
15	8.0	1.8			
17	7.1	1.4			
19	6.5	1.2			

LaCloche Station 9
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	23.5	9.0			
1	23.0	9.2			
3	22.5	9.3			
5	20.0	9.8			
7	19.0	9.9			
9	18.0	9.8			
11	14.0	10.0			
13	8.5	7.4			
15	8.0	5.2			
17	7.5	4.0			
19	7.5	3.3			
20	7.5	3.1			

LaCloche Station 9
06-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.4	9.4			
1	13.9	9.7			
3	13.9	10.3			
5	13.7	10.3			
7	13.7	9.4			
9	13.7	8.8			
11	13.7	8.3			
13	13.6	7.8			
15	13.2	7.4			
17	11.0	3.1			

LaCloche Station 11
26-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	14.3	10.3			
1	14.3	10.3			
3	14.3	10.4			
5	14.2	10.3			
7	14.9	10.6			
9	12.5	11.9			
11	8.7	14.0			
13	7.0	12.0			
15	7.0	11.6			
17	6.8	11.0			

Table B.1: continued

LaCloche Station 11
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	23.8	8.6			
1	23.8	8.9			
3	21.9	9.8			
5	20.6	10.5			
7	19.3	10.5			
9	16.5	11.9			
11	11.2	13.8			
13	8.4	13.5			
15	6.7	11.6			
17	6.3	10.5			
19	6.0	9.7			
21	5.9	9.5			
23	5.8	9.2			
24	5.8	7.6			

LaCloche Station 11
06-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.3	10.3			
1	13.4	10.3			
3	13.4	11.1			
5	13.4	11.7			
7	13.4	12.0			
9	13.3	12.3			
11	13.2	12.2			
13	9.3	7.0			
15	7.0	5.8			
17	6.3	4.9			
19	6.3	4.7			
20	6.3	3.8			

Buzwah Station 349
05-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	11.7	11.8	0	8.1	185
3.1	10.6	12.1	0	8.2	185
5.0	8.6	12.5	0	8.2	183
7.0	7.8	12.6	0	8.2	183
9.0	6.4	12.8	0	8.2	183

Buzwah Station 349
13-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	18.3	9.0	0	8.3	195
2.1	17.9	8.1	0	8.0	196
3.7	15.6	9.1	0	8.1	194
4.9	14.4	9.7	0	8.2	194
6.3	14.0	10.0	0	8.2	194
7.9	13.5	10.1	0	8.2	194
8.0	13.5	10.0	0	8.2	194
9.1	13.3	10.1	0	8.2	194
10.5	12.0	10.0	0	8.0	195
11.8	11.7	9.8	0	8.0	195

Buzwah Station 349
26-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	19.5	9.0			
1	19.5	9.3			
3	19.5	9.2			
5	19.0	9.1			
7	19.0	9.3			
9	19.0	9.3			
11	19.0	9.1			

Buzwah Station 349
14-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	18.2	9.3	0	8.3	202
1.9	18.2	9.3	0	8.3	202
3.5	18.2	9.2	1	8.3	203
5.0	18.1	9.2	1	8.3	203
6.5	18.1	9.1	1	8.3	203
7.5	18.1	9.1	1	8.2	203
8.6	17.9	9.0	1	8.2	203
9.7	15.9	9.5	2	8.1	204
10.3	15.2	9.8	2	8.0	204
11.2	14.8	9.6	2	7.9	204

Table B.1: continued

Buzwah Station 349
28-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	16.3	8.9			
1	16.3	9.6			
3	16.2	9.4			
5	16.2	9.4			
7	16.1	9.4			
9	15.9	9.7			
11	15.2	9.7			

Buzwah Station 350
05-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	11.6	11.8	33	8.2	185
1.5	11.6	11.8	0	8.2	185
3.0	11.0	12.0	0	8.2	185
4.0	9.1	12.3	0	8.3	184
5.0	8.4	12.4	0	8.2	184
6.1	8.0	12.5	0	8.2	183
7.5	7.6	12.7	0	8.2	183
10.0	6.6	12.6	0	8.2	182
12.5	6.1	12.8	0	8.2	183
15.2	6.0	12.8	0	8.2	182

Buzwah Station 350
31-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	15.0	10.2			
1	15.0	10.3			
3	15.0	10.4			
5	14.0	10.6			
7	13.8	10.8			
9	13.3	11.0			
11	13.3	11.1			
13	11.8	11.8			

Buzwah Station 350
13-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	18.4	8.9	0	8.2	195
2.5	18.1	8.4	0	8.1	195
4.3	15.2	9.5	0	8.2	194
5.6	14.2	9.9	0	8.2	194
6.9	13.9	10.0	0	8.2	194
8.4	13.3	10.4	0	8.2	193
9.7	12.7	10.3	0	8.1	194
11.3	11.9	10.1	0	8.0	194
12.6	11.7	10.0	0	8.0	195
13.3	11.6	9.9	0	8.0	194
14.1	11.4	9.9	0	7.9	195

Buzwah Station 350
26-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.0	9.5			
1	20.0	9.6			
3	19.5	9.7			
5	19.5	9.4			
7	19.5	9.3			
9	19.5	9.1			
11	19.0	9.0			
13	19.0	9.8			
15	11.0	10.4			

Table B.1: continued

Buzwah Station 350
14-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	18.1	9.2	1	8.3	201
1.7	18.1	9.2	1	8.3	202
2.9	18.1	9.2	1	8.3	202
3.7	18.1	9.2	1	8.3	202
4.2	18.1	9.2	1	8.3	202
4.8	18.1	9.2	1	8.3	202
6.4	18.1	9.1	1	8.3	203
7.8	18.0	8.9	1	8.2	203
9.3	17.6	8.6	1	8.1	204
10.4	15.6	9.5	2	8.1	204
11.8	14.7	9.5	2	7.9	203
12.9	14.4	9.6	2	7.9	204
14.2	14.2	9.2	3	7.9	204

Buzwah Station 350
28-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	16.2	8.9			
1	16.2	9.8			
3	16.2	9.6			
5	16.1	9.5			
7	16.1	9.6			
9	15.9	9.7			
11	15.1	9.9			
13	14.8	9.6			
14	14.8	9.6			

Buzwah Station 350
09-Nov-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb(NTU)	pH	Cond (uS/cm)
0.3	8.5	10.7	0	8.1	174
2.0	8.5	10.6	0	8.0	174
3.6	8.5	10.7	0	8.0	174
5.8	8.5	10.9	0	8.0	175
7.4	8.5	10.8	0	8.0	175
9.5	8.5	10.6	0	7.9	175
10.8	8.5	10.1	0	7.8	176
13.3	8.5	10.1	0	7.8	176

Buzwah Station 350
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	3.7	11.8	0	8.1	186
2.0	3.6	11.7	0	8.1	186
3.8	3.6	11.7	0	8.1	186
6.0	3.6	11.7	0	8.1	187
7.5	3.6	11.6	0	8.1	187
9.5	3.6	11.6	0	8.1	187
11.3	3.7	11.6	0	8.1	187
13.2	3.8	11.6	0	8.1	187
14.3	3.8	11.6	0	8.1	188

Buzwah Station 351
05-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	11.8	11.7	0	8.2	185
1.5	11.7	11.7	0	8.2	185
3.0	10.4	11.9	0	8.2	184
4.0	9.6	12.0	0	8.2	184
5.0	8.6	12.2	0	8.2	183
6.9	7.4	12.5	0	8.2	183
9.0	6.8	12.6	0	8.2	182
11.5	6.2	12.8	0	8.2	182
12.9	6.1	12.8	0	8.2	182
15.1	6.1	12.6	0	8.2	183

Buzwah Station 351
13-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	18.3	9.2	0	8.4	195
2.0	18.3	9.1	0	8.3	195
4.1	14.9	9.7	0	8.3	194
5.6	14.2	10.0	0	8.2	195
7.0	13.7	10.3	0	8.2	195
10.2	12.8	10.1	0	8.1	195
13.5	11.5	10.1	0	8.0	196

Table B.1: continued

Buzwah Station 351
26-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.0	9.6			
1	20.0	9.6			
3	19.5	9.7			
5	19.5	9.6			
7	19.5	9.8			
9	19.5	9.8			
11	19.0	9.6			
13	19.0	9.9			
15	11.0	10.9			

Buzwah Station 351
14-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	18.1	9.5	1	8.3	202
1.6	18.1	9.5	1	8.3	202
2.6	18.1	9.4	1	8.3	203
3.9	18.1	9.4	1	8.3	203
5.3	18.1	9.4	1	8.3	203
6.7	18.1	9.4	1	8.3	203
8.0	18.0	9.4	1	8.3	203
9.4	14.6	9.8	3	8.0	204
10.8	14.4	9.8	2	8.0	204
12.0	14.3	9.4	2	7.9	204
13.7	14.3	9.6	2	7.9	204
14.5	14.2	9.5	2	7.9	204

Buzwah Station 351
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	4.4	11.3	0	8.1	188
1.8	4.3	11.3	0	8.1	189
3.2	4.2	11.1	0	8.1	189
5.0	4.0	11.2	0	8.1	188
7.6	3.9	11.1	0	8.1	188
8.8	3.9	11.1	0	8.1	188
10.1	3.9	11.2	0	8.1	188
11.8	3.9	11.2	0	8.1	188
13.0	3.9	11.1	0	8.1	188

Buzwah Station 352
05-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	12.2	11.8	0	8.2	184
1.6	11.6	11.8	0	8.2	184
2.9	10.4	12.1	0	8.2	184
4.0	9.8	12.1	0	8.2	184
5.2	8.1	12.6	0	8.2	183
6.5	7.6	12.6	0	8.2	184
8.0	7.3	12.7	0	8.2	183
10.0	6.5	12.8	0	8.2	183
11.3	6.3	12.8	0	8.2	182

Buzwah Station 352
13-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	18.3	9.2	35	8.3	195
1.8	18.2	9.1	0	8.3	195
3.0	16.4	9.2	0	8.2	195
4.1	15.2	9.6	0	8.2	195
5.4	14.3	10.5	0	8.2	195
6.3	13.9	10.1	0	8.2	195
7.5	13.5	10.0	0	8.2	195
8.7	13.3	10.4	0	8.2	195
9.7	12.8	10.1	0	8.1	196
11.0	12.0	10.1	0	8.0	196
12.4	11.7	10.0	0	8.0	196

Buzwah Station 352
26-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.0	9.6			
1	20.0	9.7			
3	19.5	9.6			
5	19.5	9.7			
7	19.5	9.7			
9	19.5	9.8			
11	19.5	9.6			

Table B.1: continued

Buzwah Station 352
14-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	18.2	9.3	1	8.3	202
1.7	18.2	9.3	1	8.3	203
2.9	18.2	9.3	1	8.3	203
3.9	18.2	9.4	1	8.3	203
5.1	18.1	9.3	1	8.3	203
6.3	18.1	9.3	1	8.3	203
7.5	17.7	9.0	1	8.2	204
8.6	14.6	9.6	2	8.0	204
10.2	14.5	9.4	2	7.9	204

Buzwah Station 352
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.3	4.3	11.7	0	8.1	189
1.4	4.2	11.6	0	8.1	189
3.0	4.2	11.6	0	8.1	189
4.2	4.2	11.4	0	8.1	189
5.0	4.1	11.6	0	8.1	188
6.0	4.1	11.5	0	8.1	188
7.5	4.1	11.5	0	8.1	189
9.0	4.1	11.5	0	8.1	189

Buzwah Station 353
05-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	11.7	11.7	0	8.2	183
1.7	11.5	11.8	0	8.1	183
3.4	11.1	11.8	0	8.1	183
4.1	10.2	12.1	0	8.1	183
5.1	9.4	12.3	0	8.2	183
6.4	7.9	12.6	0	8.1	183
8.0	6.7	12.7	0	8.1	182
10.0	6.3	12.7	0	8.1	182
12.5	6.0	12.7	0	8.1	182
15.2	5.9	12.9	0	8.2	182

Buzwah Station 353
13-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	18.6	9.2	0	8.3	193
2.1	18.5	9.2	0	8.3	193
4.0	18.5	9.4	0	8.3	194
5.3	16.4	9.6	0	8.2	194
7.3	13.9	10.1	0	8.1	194
8.9	13.1	10.3	0	8.0	194
9.8	12.9	10.1	0	8.0	193
10.7	12.7	10.0	0	8.0	194
12.2	12.2	10.1	0	8.0	193
13.0	11.4	10.1	0	7.9	194

Buzwah Station 353
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.4	3.9	11.7	0	8.1	188
1.7	3.9	11.7	0	8.1	187
3.1	3.8	11.6	0	8.1	187
4.7	3.9	11.5	0	8.1	188
6.0	3.9	11.5	0	8.1	188
7.6	3.8	11.6	0	8.1	188
8.3	3.9	11.6	0	8.1	188

Table B.1: continued

Buzwah Station 354
13-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.9	17.2	9.5	0	8.3	195
2.1	17.1	9.5	0	8.3	196
4.2	16.7	9.8	0	8.3	195
6.4	14.2	10.2	0	8.2	195
8.3	13.5	10.3	0	8.2	195
8.9	13.0	10.4	0	8.1	195
10.3	12.2	10.4	0	8.1	195
11.7	11.8	10.5	0	8.0	195
13.3	10.9	10.3	0	7.9	195
15.1	9.8	10.5	0	7.9	196
15.9	9.7	10.4	0	7.9	195
17.3	9.7	10.5	0	7.9	196
18.9	9.5	10.5	0	7.9	196
20.1	9.4	10.5	0	7.9	195
21.2	9.3	10.4	0	7.8	196
23.5	8.5	10.2	0	7.7	196
28.7	8.2	10.1	0	7.7	195

Buzwah Station 354
14-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	17.7	9.6	0	8.4	201
2.1	17.7	9.6	0	8.4	201
3.1	17.6	9.6	0	8.4	201
4.8	17.6	9.6	0	8.4	202
6.0	17.5	9.6	1	8.4	202
8.6	16.5	10.1	1	8.3	202
10.3	15.1	10.4	2	8.2	203
12.0	14.4	10.0	2	8.1	203
13.5	13.9	9.9	2	8.0	203
14.2	13.7	9.7	2	7.9	204
16.3	12.4	9.1	2	7.7	203
18.1	11.9	8.3	2	7.6	204
20.7	11.5	8.2	2	7.5	204
23.2	11.0	8.6	1	7.5	203
24.7	10.9	8.3	2	7.5	203
26.3	10.7	7.8	2	7.5	203

Buzwah Station 355
31-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	16.2	10.3			
1	16.2	10.4			
3	16.2	10.4			
5	16.0	10.3			
7	15.9	10.3			
9	15.9	10.3			
11	15.4	10.4			
13	15.2	10.4			
15	14.8	10.5			
17	12.4	10.4			
19	12.8	11.2			
21	9.8	11.1			
23	9.6	11.2			

Buzwah Station 355
13-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	18.7	9.2	0	8.3	196
2.0	18.6	9.2	0	8.3	196
4.5	18.4	9.3	0	8.3	196
5.8	18.4	9.4	0	8.3	196
7.2	18.4	9.1	0	8.3	196
8.8	16.2	9.4	0	8.2	196
10.1	13.0	10.0	0	8.1	195
11.6	12.1	10.2	0	8.0	195
14.2	10.3	10.3	0	7.9	195
15.2	9.6	10.0	0	7.8	196
16.4	9.3	9.8	0	7.8	196
18.9	8.9	9.7	0	7.7	196
20.3	8.9	9.6	0	7.7	195
21.2	8.9	9.7	0	7.7	195
22.8	8.8	9.6	0	7.7	195

Table B.1: continued

Buzwah Station 355
26-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.5	9.4			
1	20.5	9.4			
3	20.0	9.5			
5	20.0	9.4			
7	19.0	9.9			
9	18.5	10.1			
11	18.0	10.3			
13	16.0	11.0			
15	15.0	11.2			
17	13.0	11.4			
19	12.0	11.3			

Buzwah Station 355
14-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	18.9	9.2	0	8.4	200
3.2	19.0	9.2	0	8.4	202
4.8	19.0	9.2	0	8.4	202
6.2	18.9	9.2	0	8.4	203
8.4	18.9	9.2	0	8.4	203
9.9	18.9	9.2	0	8.4	203
11.8	18.9	9.2	0	8.4	203
12.7	17.7	10.0	2	8.3	198
15.4	13.1	9.6	3	7.9	204
17.0	12.7	9.6	3	7.8	204
18.6	12.0	9.3	2	7.8	204
20.5	11.5	8.8	2	7.7	204
21.4	11.3	8.6	3	7.6	204

Buzwah Station 6
31-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.3	10.6			
1	13.4	10.6			
3	13.5	10.5			
5	13.4	10.6			
7	13.3	10.6			
9	13.2	10.5			
11	12.8	10.6			
13	11.8	10.8			
15	11.1	10.9			
17	10.4	10.9			
19	10.0	11.0			
21	9.8	10.9			

Buzwah Station 6
26-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	19.5	9.5			
1	19.5	9.6			
3	19.2	9.7			
5	19.0	9.7			
7	19.0	9.9			
9	19.0	10.0			
11	18.5	10.1			
13	18.0	10.2			
15	12.0	11.5			
17	10.0	11.5			
19	9.0	11.2			
21	8.0	10.2			

Table B.1: continued

Buzwah Station 6
28-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	16.3	9.6			
1	16.3	10.6			
3	16.3	10.6			
5	16.3	10.6			
7	16.2	10.7			
9	16.2	10.7			
11	15.6	10.4			
13	14.6	10.1			
15	14.0	9.6			
17	13.6	9.4			
19	13.4	9.3			
21	12.9	9.1			

Buzwah Station 7
31-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	15.2	10.2			
1	15.2	10.2			
3	15.2	10.2			
5	15.2	10.2			
7	15.0	10.1			
9	14.8	10.1			
11	12.8	10.5			
13	12.0	10.8			
15	11.2	11.0			
17	11.2	11.0			
19	10.2	11.1			
21	9.8	10.9			
23	9.8	10.9			

Buzwah Station 7
26-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.5	9.1			
1	20.5	9.2			
3	20.0	9.3			
5	19.5	9.5			
7	19.5	9.7			
9	19.0	9.8			
11	18.0	10.1			
13	17.0	10.3			
15	11.0	11.5			
17	10.0	11.3			

Buzwah Station 7
28-Sep-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	16.3	9.3			
1	16.3	10.3			
3	16.3	10.1			
5	15.8	10.1			
7	15.6	10.1			
9	15.1	9.8			
11	14.8	9.7			
13	14.5	9.6			
15	14.1	9.5			
17	13.7	9.3			
19	13.1	9.1			
21	12.7	9.0			
23	12.0	8.9			

Eagle Station 343
04-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	11.7	11.4	0	8.2	173
1.6	11.4	11.4	0	7.9	174
2.5	11.3	11.4	0	7.9	174
5.0	9.6	11.6	0	8.0	172
7.5	8.8	12.1	0	8.0	174
9.9	5.5	12.3	0	7.9	180
12.5	4.9	12.3	0	7.9	181
13.8	4.7	12.2	0	7.9	181

Table B.1: continued

Eagle Station 343
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	17.5	8.7	0	8.3	190
2.8	17.2	9.1	0	8.3	190
4.4	16.5	9.3	0	8.3	192
6.2	15.0	9.6	0	8.2	192
7.9	14.5	9.6	0	8.2	192
8.4	14.4	9.7	0	8.2	193
10.6	13.3	9.5	0	8.1	193
12.8	11.5	9.9	0	8.0	193
14.3	11.3	10.0	0	8.0	194
15.7	10.9	10.1	0	8.0	194
16.9	9.6	10.3	0	7.9	194

Eagle Station 343
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	21.5	9.2			
1	21.0	8.9			
3	19.5	9.5			
5	18.0	9.8			
7	16.5	8.6			
9	13.5	8.2			
11	11.0	10.3			
13	8.5	11.0			
15	8.0	10.9			
17	8.0	10.0			
18	8.0	9.8			

Eagle Station 343
16-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	18.9	8.3	35	8.0	201
3.7	18.9	8.5	10	8.1	201
5.1	18.9	8.5	9	8.1	201
6.5	18.8	8.5	8	8.0	202
8.1	18.8	8.3	6	8.0	202
9.6	18.8	8.1	5	8.0	202
11.2	18.8	8.0	4	7.9	202
12.4	18.6	8.0	4	7.9	202
13.6	18.4	7.8	5	7.8	202

Eagle Station 343
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	14.0	8.4			
1	14.0	8.9			
3	14.0	10.8			
5	14.0	10.6			
7	14.0	10.4			
9	14.0	10.4			
11	14.0	10.4			
13	14.0	10.4			
15	14.0	9.8			
17	14.0	9.2			

Eagle Station 343
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.3	3.3	11.7	0	8.1	179
1.7	3.3	11.7	0	8.1	179
3.5	3.3	11.6	0	8.1	179
5.3	3.3	11.5	0	8.1	179
6.7	3.3	11.5	0	8.1	179
8.5	3.3	11.3	0	8.1	180
10.0	3.3	11.2	0	8.1	179
12.1	3.3	11.2	0	8.0	179
14.0	3.3	11.3	0	8.0	179

Eagle Station 344
04-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	11.7	11.5	0	8.3	170
1.6	11.4	11.4	0	8.1	173
2.7	11.0	11.3	0	8.0	172
3.5	10.7	11.3	0	8.0	172
4.9	9.4	11.3	0	7.9	174
6.5	7.4	11.9	0	8.1	173
8.0	6.9	12.1	0	8.1	174
9.0	6.6	12.2	0	8.1	175

Table B.1: continued

Eagle Station 344
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	17.6	9.0	0	8.3	191
1.7	17.5	9.0	0	8.2	191
2.1	17.5	9.0	0	8.2	191
2.5	17.5	8.9	0	8.2	190
4.0	16.7	8.2	0	7.9	192
5.4	15.7	8.9	0	8.0	192
7.4	14.7	9.4	0	8.1	193
9.0	14.0	9.8	0	8.1	193
9.3	14.1	9.8	0	8.1	193

Eagle Station 344
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	21.0	9.8			
1	21.0	10.0			
3	19.0	10.4			
5	18.0	10.2			
7	12.5	11.2			
9	15.0	9.2			
10	12.0	10.9			

Eagle Station 344
16-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.1	18.9	8.8	1	8.1	200
2.3	18.9	8.8	1	8.1	201
3.7	18.9	8.9	1	8.2	201
5.5	18.8	9.0	1	8.2	201
6.8	18.8	8.9	1	8.2	201
8.2	18.8	8.8	1	8.1	201
10.0	18.8	8.6	1	8.1	201

Eagle Station 344
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.0	9.2			
1	13.0	9.1			
3	13.0	8.7			
5	13.0	9.8			
7	13.0	9.9			
9	13.0	9.5			

Eagle Station 344
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.3	3.3	11.7	0	8.1	178
1.5	3.3	11.6	0	8.1	178
2.9	3.3	11.6	0	8.1	179
5.0	3.2	11.6	0	8.1	178
7.4	3.2	11.5	0	8.1	179
9.0	3.3	11.5	0	8.1	179

Eagle Station 345
04-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	11.7	11.2	0	8.2	171
1.6	11.5	11.1	0	8.1	169
2.6	11.3	11.0	0	8.0	172
4.4	10.1	11.1	0	7.9	173
6.0	8.4	11.6	0	8.1	172
7.1	7.3	12.0	0	8.1	177
10.0	5.7	12.3	0	8.0	179
11.2	5.1	12.1	0	8.0	180
13.3	4.8	12.2	0	8.0	180
15.3	4.7	12.1	0	7.9	181
16.5	4.6	12.0	0	7.9	181
18.0	4.6	12.0	0	7.9	181

Table B.1: continued

Eagle Station 345
25-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.4	10.4			
1	13.3	10.4			
3	12.5	10.2			
5	11.8	10.2			
7	11.3	10.9			
9	10.6	11.2			
11	10.2	11.5			
13	9.3	11.5			
15	7.8	11.5			
17	7.4	11.5			

Eagle Rock 345
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	17.6	9.3	3	8.3	190
2.4	17.4	8.9	0	8.2	190
4.5	16.4	9.0	0	8.1	192
6.3	15.4	9.3	0	8.1	193
10.0	13.4	9.7	0	8.0	194
12.0	11.8	10.1	0	8.0	194
13.9	11.1	10.3	0	8.0	195
15.4	9.9	10.4	0	7.9	195
17.4	9.5	10.3	0	7.8	195
18.9	9.5	10.2	0	7.8	196

Eagle Station 345
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	21.3	9.4			
1	21.0	9.4			
3	20.0	9.8			
5	18.0	10.0			
7	17.0	10.4			
9	14.0	9.3			
11	11.0	11.0			
13	9.0	11.1			
15	8.0	11.0			
17	8.0	10.8			
18	8.0	10.6			

Eagle Station 345
16-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.2	18.8	9.0	0	8.2	200
2.8	18.8	9.0	1	8.2	200
3.8	18.8	9.0	1	8.2	200
5.2	18.8	8.9	1	8.2	200
6.8	18.8	8.9	1	8.2	201
8.5	18.8	8.8	1	8.1	201
10.3	18.8	8.6	1	8.1	201
11.9	18.8	8.5	1	8.1	201
12.5	18.8	8.5	1	8.0	201
15.7	14.7	7.9	3	7.7	202

Eagle Station 345
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.5	9.1			
1	13.0	9.2			
3	13.0	10.8			
5	13.0	11.8			
7	13.0	11.3			
9	13.0	10.8			
11	13.0	10.8			
13	13.0	10.8			
15	13.0	11.0			
17	13.0	10.6			
18	13.0	10.1			

Eagle Station 345
09-Nov-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb(NTU)	pH	Cond (uS/cm)
0.9	8.3	9.8	0	7.9	169
2.3	8.3	9.7	0	7.8	169
4.2	8.2	9.8	0	7.8	170
5.8	8.2	10.0	0	7.8	169
8.2	8.2	10.0	0	7.7	170
10.8	8.2	9.7	0	7.7	171
12.6	8.2	9.6	0	7.7	170
15.2	8.2	9.6	0	7.7	171
17.0	8.3	9.5	0	7.7	170
19.0	8.2	9.9	0	7.7	170

Table B.1: continued

Eagle Station 345
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.4	3.3	11.7	0	8.1	179
1.8	3.4	11.7	0	8.1	179
3.2	3.3	11.6	0	8.1	179
4.6	3.3	11.5	0	8.1	179
6.8	3.3	11.6	0	8.1	178
7.9	3.3	11.5	0	8.1	179
9.5	3.3	11.4	0	8.1	179
11.0	3.3	11.4	0	8.0	178
12.6	3.3	11.4	0	8.0	179
14.3	3.3	11.3	0	8.0	179

Eagle Station 346
04-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	12.0	11.3	0	8.0	173
1.5	11.7	11.0	0	8.0	170
3.1	10.3	11.3	0	8.1	171
5.0	9.6	11.6	0	8.2	170
6.5	7.9	11.9	0	8.1	175
8.6	6.4	12.2	0	8.1	176
10.3	5.5	12.2	0	8.1	180
12.0	5.1	12.3	0	8.0	181
13.1	4.9	12.3	0	8.0	180
15.0	4.7	12.2	0	8.0	180
17.4	4.5	12.2	0	8.0	181
20.5	4.4	12.1	0	7.9	181
22.5	4.4	11.8	0	7.9	181

Eagle Station 346
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.9	17.6	8.8	0	8.2	190
2.2	17.5	8.9	0	8.2	190
4.0	16.4	9.4	0	8.3	191
5.8	15.5	9.6	0	8.2	192
6.9	15.1	9.5	0	8.2	192
9.3	13.9	9.8	0	8.1	193
11.6	12.1	10.2	0	8.1	194
14.4	11.2	10.4	0	8.0	194
16.3	10.1	10.2	0	7.9	194
17.7	9.8	10.4	0	7.9	194
19.5	9.3	10.4	0	7.9	195
21.0	9.2	10.4	0	7.8	195
22.5	9.1	10.3	0	7.8	194

Eagle Station 346
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	21.0	9.0			
1	21.0	9.1			
3	19.5	9.5			
5	18.0	10.6			
7	16.5	10.2			
9	14.0	9.6			
11	11.0	10.5			
13	8.5	11.0			
15	8.0	11.2			
17	7.5	10.9			
19	7.0	10.9			
21	7.0	10.9			

Table B.1: continued

Eagle Station 346
16-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.1	18.9	8.4	1	8.1	201
2.4	19.0	8.6	1	8.1	201
3.3	18.9	8.7	2	8.1	201
4.7	18.9	8.7	1	8.1	201
6.0	18.9	8.6	1	8.1	201
7.2	18.9	8.8	1	8.1	201
8.6	18.9	8.6	1	8.1	201
10.3	18.9	8.5	1	8.0	202
12.1	18.8	8.0	1	7.9	202
13.8	18.7	7.9	1	7.9	202
16.1	14.0	8.1	2	7.7	202
17.9	12.3	7.9	3	7.6	202
19.8	11.2	8.2	3	7.6	203
21.9	11.1	8.0	3	7.5	202

Eagle Station 346
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.0	8.6			
1	13.0	8.8			
3	13.0	10.8			
5	13.0	11.8			
7	13.0	12.2			
9	13.0	12.2			
11	13.0	12.3			
13	13.0	12.0			
15	13.0	11.8			
17	13.0	11.6			
19	13.0	11.2			
21	13.0	10.8			

Eagle Station 346
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	3.4	11.8	0	8.1	179
2.0	3.4	11.6	0	8.1	178
4.9	3.3	11.6	0	8.1	178
8.8	3.4	11.7	0	8.1	178
11.8	3.4	11.6	0	8.1	178
14.1	3.3	11.6	0	8.1	178
16.1	3.3	11.6	0	8.1	178
17.4	3.3	11.6	0	8.1	178
19.0	3.3	11.7	0	8.1	178
21.2	3.3	11.7	0	8.1	178

Eagle Station 347
04-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	11.8	11.3	0	8.3	169
1.5	11.4	11.4	0	8.0	171
2.5	11.0	11.4	0	8.0	170
4.0	10.0	11.6	0	8.0	170
5.0	9.1	11.7	0	8.1	169
6.2	8.3	12.0	0	8.1	172
7.5	7.7	12.1	0	8.0	181
10.0	5.7	12.3	0	8.0	180
12.6	5.0	12.4	0	8.0	180
15.1	4.6	12.3	0	8.0	180
17.5	4.5	12.4	0	8.0	181
20.0	4.4	12.3	0	8.0	180
22.5	4.4	12.2	0	7.9	181
25.0	4.3	12.1	0	7.9	181
27.5	4.3	11.8	0	7.8	181

Table B.1: continued

Eagle Station 347
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.7	17.1	9.2	0	8.1	190
2.2	16.7	9.3	0	8.2	189
3.0	16.3	9.5	0	8.2	190
4.1	15.8	9.7	0	8.2	191
5.0	15.7	9.7	0	8.1	190
5.9	15.5	9.5	0	8.1	191
6.9	15.1	9.5	0	8.1	190
9.7	14.2	9.8	0	8.1	191
10.8	13.3	9.8	0	8.1	192
12.2	12.1	10.1	0	8.0	192
14.4	11.4	10.3	0	8.0	192
17.3	10.0	10.6	0	7.9	193
20.1	9.7	10.3	0	7.8	193
22.4	9.3	10.3	0	7.8	193
24.5	9.2	10.3	0	7.8	193
27.9	9.2	10.3	0	7.8	193
28.9	9.2	10.3	0	7.8	193

Eagle Station 347
16-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	18.8	9.0	1	8.2	201
1.8	18.8	9.0	1	8.2	201
2.9	18.9	9.0	0	8.2	201
4.2	18.8	9.0	1	8.2	201
5.7	18.8	9.0	1	8.2	201
7.2	18.8	9.0	1	8.2	201
8.7	18.8	9.0	1	8.2	201
10.3	18.8	9.0	0	8.2	201
11.4	18.8	9.0	1	8.2	201
13.3	18.8	8.9	1	8.2	201
14.9	15.0	7.5	2	7.7	202
15.7	14.3	8.0	2	7.6	202
16.7	13.7	8.2	2	7.6	202
18.1	12.4	7.9	2	7.6	202
19.1	11.7	7.9	1	7.5	202
20.1	11.5	7.9	1	7.5	202
21.8	11.1	8.1	1	7.5	202
23.6	10.7	8.1	1	7.5	202
24.4	10.6	8.2	1	7.5	202
26.4	10.4	8.3	1	7.5	202
28.0	10.2	8.3	1	7.5	202

Eagle Station 348
04-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	12.8	11.3	0	7.9	166
1.5	12.3	11.2	0	8.0	166
3.1	11.0	11.6	0	8.1	168
5.0	9.1	11.9	0	8.0	171
6.0	8.4	12.0	0	8.0	178
7.4	6.7	12.2	0	8.1	173
8.7	5.9	12.3	0	8.0	176
12.0	4.8	12.4	0	8.0	179
14.1	4.7	12.3	0	7.9	180
15.5	4.6	12.3	0	7.9	180
17.5	4.5	12.2	0	7.9	181
20.0	4.4	12.1	0	7.9	181
21.5	4.4	12.0	0	7.9	180

Table B.1: continued

Eagle Station 348
25-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.8	10.2			
1	13.8	10.2			
3	13.7	10.3			
5	13.7	10.3			
7	10.8	10.3			
9	9.0	11.4			
11	8.4	11.4			
13	8.0	11.6			
15	7.7	11.6			
17	7.7	11.6			
19	7.3	11.6			
21	7.1	11.4			
23	7.0	11.4			
25	6.8	11.4			
27	6.8	11.4			
29	6.8	11.4			
31	6.7	11.4			

Eagle Station 348
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	18.2	9.0	0	8.2	186
2.7	17.2	9.3	0	8.2	190
5.1	16.6	9.6	0	8.2	191
7.6	15.5	9.6	0	8.1	190
9.9	13.6	10.1	0	8.0	191
12.2	12.9	10.2	0	8.0	190
13.9	12.1	10.1	0	7.9	191
15.4	11.7	10.2	0	7.9	192
17.1	11.4	10.2	0	7.9	192
18.9	10.3	10.4	0	7.8	191
20.3	9.9	10.3	0	7.8	192
22.1	9.3	10.4	0	7.8	192

Eagle Station 348
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	21.5	9.8			
1	21.0	9.8			
3	21.0	9.8			
5	18.0	10.6			
7	16.0	11.0			
9	12.5	11.7			
11	10.5	12.0			
13	9.0	12.0			
15	8.5	12.0			
17	8.0	12.1			
19	8.0	11.9			
21	7.5	11.8			
23	7.5	11.6			
25	7.5	11.5			
26	7.0	11.2			

Eagle Station 348
16-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	19.4	8.6	2	8.2	195
2.1	19.3	8.7	1	8.2	196
3.3	19.2	8.7	1	8.2	196
4.7	19.1	8.8	1	8.3	198
6.4	19.1	8.8	1	8.3	198
8.0	19.0	8.8	1	8.3	198
9.7	18.8	8.8	1	8.3	198
11.1	18.4	9.0	1	8.3	200
12.5	18.1	9.1	1	8.2	200
14.3	15.5	8.4	1	8.0	201
16.0	14.2	8.5	1	7.8	200
17.6	13.3	8.2	2	7.7	200
19.9	11.6	8.0	2	7.7	200
20.6	11.4	8.2	2	7.6	200

Table B.1: continued

Eagle Station 348
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.0	9.7			
1	13.0	10.4			
3	13.0	11.2			
5	13.0	11.8			
7	13.0	12.2			
9	13.0	11.4			
11	12.5	11.2			
13	12.5	11.1			
15	12.5	11.0			
17	12.5	10.7			
19	12.5	10.4			
21	12.0	10.0			
23	12.0	10.0			
25	12.0	10.4			
27	11.5	9.2			
29	11.0	9.0			
31	11.0	9.0			
32	10.5	8.3			

Eagle Station 6
25-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.4	10.7			
1	13.4	10.7			
3	13.3	10.8			
5	13.2	10.8			
7	10.7	11.7			
9	10.2	11.7			
11	9.5	11.8			
13	8.5	11.8			
15	9.3	12.2			
17	8.8	12.2			
19	8.4	12.2			
21	8.3	12.2			
23	8.2	12.2			
25	8.0	12.2			
27	7.8	12.2			

Eagle Station 6
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	21.0	9.0			
1	20.0	9.2			
3	19.5	9.4			
5	17.5	10.7			
7	16.5	11.0			
9	13.5	11.4			
11	11.0	11.8			
13	9.0	12.0			
15	8.0	12.2			
17	7.5	11.9			
19	7.0	11.9			
21	7.0	11.8			
23	7.0	11.7			
25	7.0	11.6			
27	6.5	9.2			

Eagle Station 6
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.0	9.6			
1	13.0	9.5			
3	13.0	10.2			
5	13.0	10.6			
7	13.0	10.6			
9	13.0	10.8			
11	13.0	10.9			
13	13.0	10.9			
15	13.0	10.8			
17	12.5	10.4			
19	12.5	10.4			
21	12.5	9.7			
23	12.5	9.0			
25	12.0	9.4			
26	12.0	8.8			

Table B.1: continued

Fisher Station 356
07-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	11.9	11.8	0	8.1	186
1.7	11.9	11.7	1	8.1	186
2.5	11.9	11.6	0	8.1	187
5.0	11.6	11.6	0	8.1	189
6.0	11.1	11.7	0	8.1	191
7.1	10.3	11.9	0	8.1	195
8.1	10.1	12.2	1	8.1	194
9.3	10.0	12.3	0	8.1	194
11.0	9.9	12.5	0	8.1	194
13.5	9.0	12.8	1	8.1	194
15.6	8.4	12.8	1	8.1	193
16.0	6.2	13.4	1	8.1	191
16.6	6.2	13.4	1	8.1	191
17.3	6.2	13.3	1	8.1	191
18.2	6.2	13.3	1	8.1	191
19.9	6.1	13.3	1	8.1	191
22.1	6.0	13.4	1	8.1	191
22.9	5.7	13.4	1	8.1	191
25.0	5.3	13.3	1	8.0	191
26.2	4.9	13.2	1	8.0	191
28.1	4.7	13.2	1	8.0	191
30.0	4.7	13.1	1	8.0	190
32.0	4.2	13.1	1	8.0	190

Fisher Station 356
25-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	12.8	11.2			
1	12.4	11.2			
3	12.2	11.3			
5	12.2	11.5			
7	12.1	11.5			
9	11.8	11.6			
11	11.3	11.8			
13	10.6	12.1			
15	10.7	12.1			
17	10.7	12.1			
19	10.6	12.1			
21	10.4	12.0			
23	10.4	12.0			
25	10.4	12.0			
27	10.3	12.0			
29	10.3	12.2			
31	9.9	12.2			
33	9.6	12.3			
35	8.8	12.4			

Table B.1: continued

Fisher Station 356
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.4	17.2	9.4	0	8.3	194
3.7	16.7	9.6	0	8.3	195
5.3	16.4	9.7	0	8.3	194
6.6	16.1	9.6	0	8.3	194
8.0	15.0	9.8	0	8.2	194
9.1	14.8	9.9	0	8.2	194
10.4	13.2	10.1	0	8.1	194
13.2	12.5	10.3	0	8.1	195
15.1	12.4	10.3	0	8.1	195
16.8	12.0	10.3	0	8.0	195
18.3	11.6	10.3	0	8.0	195
20.0	10.8	10.4	0	8.0	195
22.0	10.1	10.5	0	7.9	195
23.6	9.9	10.4	0	7.9	195
25.8	9.5	10.5	0	7.9	196
27.7	9.0	10.6	0	7.9	196
29.3	8.6	10.7	0	7.9	195
31.3	8.2	10.7	0	7.8	196
33.1	8.0	10.7	0	7.8	196

Fisher Station 356
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	21.0	9.5			
1	20.0	9.4			
3	19.5	9.6			
5	18.0	9.6			
7	16.0	9.8			
9	13.0	10.2			
11	11.0	10.6			
13	10.0	11.2			
15	9.0	10.7			
17	8.5	10.7			
19	8.5	10.6			
21	8.0	10.5			
23	7.5	10.6			
25	7.5	9.7			
27	7.0	10.7			
29	7.0	10.4			
31	7.0	10.4			
33	6.5	10.1			
35	6.5	10.0			
37	6.0	9.6			

Table B.1: continued

Fisher Station 356
15-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.9	19.0	9.1	1	8.3	203
2.0	19.0	9.1	1	8.3	203
4.4	19.0	9.1	1	8.3	203
7.1	19.0	9.1	1	8.3	203
10.6	19.0	9.1	1	8.3	204
12.9	18.9	9.1	1	8.3	204
13.8	18.7	9.0	1	8.2	203
15.2	18.4	9.2	1	8.2	204
16.9	16.5	9.2	1	8.0	204
18.5	14.5	9.4	1	7.8	204
19.6	14.2	9.3	1	7.8	204
20.9	13.9	9.5	2	7.8	205
21.8	13.0	8.6	1	7.6	204
24.0	11.9	9.0	2	7.6	204
24.7	11.7	9.0	1	7.6	204
29.0	10.6	8.7	1	7.5	204
31.7	10.4	8.6	1	7.5	204
33.8	10.2	8.4	2	7.5	204

Fisher Station 356
09-Nov-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb(NTU)	pH	Cond (uS/cm)
2.3	8.8	10.9	0	8.1	173
4.5	8.8	11.0	0	8.1	173
7.3	8.7	11.0	0	8.1	173
9.1	8.7	10.9	0	8.1	173
11.6	8.7	10.8	0	8.0	173
13.7	8.7	10.7	0	8.0	173
15.8	8.7	10.8	0	8.0	173
20.4	8.7	10.9	0	8.0	173
21.0	8.7	10.7	0	8.0	173
20.8	8.7	10.7	0	8.0	172
23.2	8.6	10.8	0	8.0	172
25.2	8.5	10.8	0	8.0	172
27.7	8.5	10.8	0	8.0	172
31.0	8.4	10.8	0	8.0	171
33.0	8.4	10.7	0	8.0	171

Fisher Station 357
07-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	11.4	11.3	1	8.0	188
1.5	11.4	11.3	2	8.0	187
3.0	11.3	11.3	1	8.0	188
5.0	11.3	11.4	1	8.0	189
7.1	11.3	11.4	1	8.0	189
9.0	10.4	11.6	1	8.0	191
9.4	9.9	12.1	1	8.0	193

Fisher Station 357
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	16.8	9.5	0	8.4	195
2.1	16.7	9.4	0	8.3	195
3.6	16.6	9.4	0	8.3	195
5.6	16.2	9.3	0	8.2	196
7.3	15.4	9.0	0	8.0	197
8.4	15.1	9.4	0	8.1	197
10.0	13.8	9.8	0	8.1	197
11.0	13.0	10.0	0	8.1	198
12.1	13.0	10.0	0	8.1	196
12.7	12.4	10.1	0	8.1	197

Fisher Station 357
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.0	8.8			
1	20.0	8.8			
3	20.0	8.8			
5	18.0	9.2			
7	15.0	8.7			
9	14.0	9.4			
11	10.0	10.4			
13	9.0	10.5			

Table B.1: continued

Fisher Station 357
15-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	19.0	8.9	4	8.3	203
1.8	19.0	8.8	3	8.2	203
3.0	19.0	8.9	3	8.3	203
4.5	19.0	8.7	2	8.2	204
5.9	19.0	8.8	2	8.2	204
7.1	19.0	8.7	2	8.2	204
8.3	19.0	8.7	2	8.2	204
9.5	19.0	8.7	2	8.2	204
10.6	19.0	8.8	1	8.2	204
11.7	18.7	8.7	1	8.2	204
12.8	18.6	8.9	1	8.2	204
13.6	18.6	8.9	1	8.1	205

Fisher Station 357
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.0	10.1			
1	12.5	9.8			
3	12.5	11.2			
5	12.5	11.9			
7	12.0	11.7			
9	12.0	11.2			
11	12.0	11.0			
13	12.0	10.9			
15	12.0	10.6			
17	12.0	10.4			
19	12.0	10.1			
21	12.0	10.1			
23	12.0	9.6			
25	11.5	9.7			
27	11.0	9.6			
29	11.0	9.2			
31	10.0	8.7			
33	10.0	8.4			
35	9.0	8.1			
36	9.0	7.7			

Fisher Station 357
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	2.9	11.9	0	8.1	184
2.2	3.0	11.8	0	8.0	185
3.7	2.9	11.7	0	8.0	184
6.3	2.9	11.8	0	8.0	185
7.8	2.9	11.7	0	8.0	184
9.5	2.9	11.7	0	8.0	185
10.8	2.9	11.8	0	8.1	185

Fisher Station 358
07-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	11.5	11.5	1	8.1	188
1.4	11.5	11.5	0	8.1	188
2.2	11.4	11.5	1	8.0	188
3.0	11.4	11.5	1	8.0	189
5.0	11.3	11.2	1	8.0	189
7.0	10.1	11.7	1	8.0	193
8.0	9.8	12.0	1	8.0	192
10.1	9.6	12.1	1	8.1	192
12.0	9.4	12.2	1	8.1	192
12.6	8.6	12.3	1	8.0	191
13.1	7.7	12.4	1	8.0	191
13.9	7.0	12.6	1	8.0	190
14.5	6.6	12.6	1	8.0	189
15.5	6.5	12.7	1	8.0	189
16.1	6.3	12.7	1	8.0	190
17.0	6.2	12.8	1	8.0	190

Table B.1: continued

Fisher Station 358
25-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	12.5	11.0			
1	12.5	11.2			
3	12.0	11.4			
5	11.9	11.5			
7	11.9	11.5			
9	11.9	11.5			
11	11.5	11.6			
13	11.5	11.6			
15	11.5	11.6			
17	11.1	11.8			

Fisher Station 358
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.8	16.9	9.4	0	8.3	195
1.3	16.8	9.4	0	8.3	195
2.3	16.7	9.4	0	8.3	195
3.4	16.7	9.4	0	8.3	195
5.1	16.4	9.4	0	8.3	195
6.5	16.2	9.4	0	8.2	196
8.0	15.7	9.1	0	8.1	197
9.7	14.2	9.9	0	8.1	195
11.0	13.2	10.0	0	8.1	195
13.5	11.8	10.2	0	8.1	196
14.1	11.6	10.4	0	8.0	195
16.2	11.3	10.4	0	8.0	195
17.5	11.2	10.3	0	8.0	196
17.7	11.2	10.2	0	8.0	196

Fisher Station 358
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.5	8.8			
1	20.0	9.0			
3	20.0	8.8			
5	18.0	9.3			
7	15.5	9.5			
9	14.0	10.0			
11	10.5	10.6			
13	10.0	10.8			
15	9.0	11.0			
17	8.5	10.1			

Fisher Station 358
15-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.9	19.0	8.8	1	8.2	203
2.2	19.0	8.8	2	8.2	203
3.4	19.0	8.9	1	8.2	203
4.6	19.0	8.9	2	8.2	204
5.9	18.9	8.7	2	8.2	204
7.5	18.9	8.8	2	8.2	204
9.0	18.9	8.9	1	8.2	204
10.3	18.9	9.0	1	8.3	204
12.1	18.9	8.9	1	8.3	204
13.6	18.6	9.0	1	8.2	204
14.9	17.9	9.0	1	8.1	204
16.2	17.4	8.8	2	8.0	205

Fisher Station 358
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.0	9.8			
1	13.0	9.8			
3	13.0	10.4			
5	13.0	11.4			
7	13.0	11.6			
9	13.0	11.6			
11	13.0	11.4			
13	13.0	10.5			
15	13.0	10.2			
17	13.0	11.2			

Table B.1: continued

Fisher Station 358
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.4	2.9	12.0	0	8.1	184
2.0	2.8	11.8	0	8.1	184
3.8	2.8	11.8	0	8.1	185
6.8	2.8	11.7	0	8.1	184
8.7	2.8	11.8	0	8.1	184
11.1	2.8	11.7	0	8.1	185
13.6	2.9	11.8	0	8.1	185
15.5	2.9	11.8	0	8.1	184

Fisher Station 359
07-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	11.6	11.5	0	8.0	186
1.5	11.6	11.5	1	8.0	186
3.0	11.5	11.5	1	8.0	186
5.0	11.4	11.5	1	8.0	188
7.0	11.1	11.0	1	7.9	189
8.0	10.4	11.6	1	7.9	191
8.9	9.9	12.3	1	8.0	192
10.0	9.7	12.5	1	8.0	192
12.1	9.3	12.5	1	8.0	192
12.5	8.3	12.8	1	8.0	191
13.0	7.8	12.8	1	8.0	190
14.0	6.7	13.0	1	8.0	189
15.0	6.5	13.1	1	8.0	189
15.5	6.3	13.1	1	8.0	189

Fisher Station 359
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	16.7	9.2	0	8.3	195
2.8	16.3	9.4	0	8.3	195
4.6	16.1	9.6	0	8.3	197
7.1	15.0	9.7	0	8.2	197
8.6	14.8	9.9	0	8.2	196
10.0	14.0	9.9	0	8.2	195
11.7	13.2	10.0	0	8.1	195
12.7	13.1	10.1	0	8.1	196
13.6	13.0	10.0	0	8.1	196
15.0	12.2	10.2	0	8.1	198
16.0	11.8	10.2	0	8.1	197

Fisher Station 359
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.0	9.6			
1	20.0	9.6			
3	19.0	9.3			
5	18.0	9.3			
7	15.5	8.4			
9	12.5	9.4			
11	10.0	11.1			
13	9.0	11.2			

Fisher Station 359
15-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	19.0	9.0	0	8.3	203
1.5	19.0	9.0	4	8.3	203
2.5	19.0	9.0	3	8.3	203
4.1	19.0	9.0	3	8.3	203
5.3	19.0	9.0	3	8.3	203
6.7	19.0	9.0	3	8.3	203
8.8	19.0	9.0	2	8.3	203
10.0	19.0	9.0	2	8.3	204
10.9	19.0	9.0	2	8.3	204
11.8	18.6	9.0	2	8.2	204
13.0	18.3	9.1	2	8.2	204

Table B.1: continued

Fisher Station 359
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.0	9.8			
1	13.0	9.6			
3	12.5	10.0			
5	12.5	9.8			
7	12.5	10.0			
9	12.5	9.8			
11	12.5	9.6			
13	12.5	9.6			
14	12.5	9.2			

Fisher Station 359
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	2.9	11.8	0	8.0	185
2.3	2.9	11.6	0	8.0	185
5.2	2.9	11.5	0	8.0	184
7.4	2.9	11.5	0	8.0	185
9.2	2.9	11.5	0	8.0	185
11.3	2.9	11.5	0	8.0	185
13.0	2.9	11.5	0	8.0	185
14.0	2.9	11.6	0	8.0	185

Fisher Station 360
07-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	11.7	11.8	6	8.0	186
1.5	11.6	11.8	5	8.0	186
2.5	11.7	11.8	5	8.0	187
5.0	11.5	11.8	1	8.0	187
7.0	11.0	11.6	1	7.9	188
7.5	10.8	11.8	1	7.9	189
9.0	10.1	12.2	1	8.0	191
10.1	9.7	12.4	1	8.0	192
11.0	9.6	12.5	1	8.0	192
12.0	9.5	12.5	1	8.0	192
13.0	9.4	12.5	1	8.0	192
13.9	7.5	12.9	1	8.0	190
14.5	6.8	13.0	1	8.0	190
15.4	6.7	13.0	1	8.0	189
16.0	6.5	13.1	1	8.0	189
17.0	6.2	13.1	1	8.0	189

Fisher Station 360
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	16.7	9.4	0	8.3	194
2.6	16.6	9.4	0	8.3	194
4.0	16.3	9.4	0	8.3	194
6.2	16.1	9.4	0	8.3	197
7.8	15.4	9.6	0	8.2	198
9.8	13.9	9.9	0	8.2	194
12.2	12.9	10.2	0	8.1	195
13.8	12.5	10.3	0	8.1	196
15.6	11.8	10.3	0	8.1	195
17.1	11.4	10.4	0	8.0	195
18.0	11.3	10.3	0	8.0	196

Table B.1: continued

Fisher Station 360
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	20.0	9.4			
1	20.0	9.4			
3	20.0	9.5			
5	18.0	9.6			
7	16.0	8.9			
9	14.0	10.0			
11	10.5	11.2			
13	9.5	11.2			
15	9.0	11.6			
17	8.5	10.8			

Fisher Station 360
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	13.0	9.8			
1	13.0	9.4			
3	13.0	9.0			
5	12.5	9.0			
7	12.0	9.0			
9	12.0	9.0			
11	12.0	9.0			
13	12.0	9.1			
15	12.0	8.9			
17	12.5	9.0			

Fisher Station 360
15-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.6	19.0	9.0	3	8.3	203
2.1	19.0	9.0	3	8.3	203
3.3	19.0	9.0	3	8.3	203
4.4	19.0	9.0	3	8.3	203
5.7	19.0	9.0	2	8.3	203
7.4	19.0	9.0	9	8.3	203
8.9	19.0	9.0	12	8.3	203
10.4	18.9	9.0	11	8.2	203
12.1	18.9	8.9	11	8.2	204
13.0	18.5	9.1	11	8.2	204
14.8	18.0	9.1	10	8.2	204
16.3	17.1	9.1	10	8.1	204

Fisher Station 360
19-Apr-00

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	2.9	12.0	0	8.0	184
2.6	2.8	11.8	0	8.0	184
4.9	2.8	11.8	0	8.0	184
7.1	2.8	11.7	0	8.0	185
9.7	2.9	11.7	0	8.0	185
12.3	2.9	11.8	0	8.0	185
14.4	2.9	11.7	0	8.0	184
15.1	2.9	11.7	0	8.0	185

Table B.1: continued

Fisher Station 361
07-May-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.5	11.0	11.6	1	8.1	187
1.5	11.0	11.5	1	8.1	188
2.5	11.0	11.5	1	8.1	189
5.0	10.9	11.6	1	8.1	188
7.0	10.5	11.9	1	8.1	189
8.0	9.6	12.4	1	8.2	189
9.0	9.0	12.3	1	8.1	190
10.1	8.7	12.4	1	8.1	189
11.0	8.6	12.4	1	8.1	189
12.2	7.7	12.4	1	8.1	188
13.0	7.1	12.7	1	8.1	188
14.0	7.0	12.9	1	8.1	188

Fisher Station 361
12-Jul-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
1.0	16.8	9.6	0	8.3	195
2.0	16.5	9.4	0	8.3	195
4.0	16.4	9.5	0	8.3	194
6.0	16.1	9.6	0	8.3	195
7.9	15.7	9.6	0	8.2	195
9.0	14.1	9.4	0	8.1	196
11.2	11.6	10.2	0	8.0	196

Fisher Station 361
15-Sep-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0.7	19.0	9.0	1	8.3	203
1.8	19.0	9.0	1	8.3	203
3.8	18.9	9.1	1	8.3	203
5.5	18.9	9.1	1	8.3	203
7.2	18.9	9.1	1	8.3	203
8.6	18.8	9.1	1	8.3	203
10.3	18.6	9.0	1	8.2	203
11.7	18.4	9.0	1	8.2	204
13.5	18.0	9.0	1	8.1	204
15.1	17.5	9.0	1	8.1	204
16.6	16.6	8.9	1	7.9	204
17.9	15.9	8.9	2	7.9	204
19.5	14.4	8.9	2	7.8	204

Fisher Station 6
19-Jul-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	21.5	9.1			
1	21.0	9.2			
3	19.0	9.7			
5	18.0	9.6			
7	16.0	9.7			
9	13.0	10.0			
11	12.0	10.0			
13	10.5	10.4			
15	9.0	10.4			
17	9.0	10.6			
19	8.0	10.4			
21	8.0	10.4			
23	8.0	10.4			
25	7.5	10.4			
27	7.5	10.4			
29	7.5	10.2			
31	7.0	10.2			
33	7.0	9.9			
34	6.5	8.8			

Table B.1: continued

Fisher Station 6
25-May-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	12.4	11.2			
1	12.3	11.3			
3	11.8	11.3			
5	11.8	11.4			
7	11.0	11.6			
9	11.0	11.8			
11	10.9	11.8			
13	10.8	11.8			
15	10.8	11.8			
17	10.7	11.7			
19	10.5	11.7			
21	10.4	11.8			
23	10.3	11.8			
25	10.0	11.7			
27	9.7	11.7			
29	9.0	12.0			
31	8.4	12.0			
33	7.9	12.0			
35	7.5	12.0			
37	7.3	11.9			

Fisher Station 6
04-Oct-99

Depth (m)	Temp (deg C)	D.O. (mg/L)	Turb (NTU)	pH	Cond (uS/cm)
0	11.5	10.0			
1	13.0	10.0			
3	13.0	10.4			
5	13.0	11.0			
7	13.0	11.1			
9	13.0	11.2			
11	12.5	10.8			
13	12.5	11.0			
15	12.5	10.9			
17	12.5	10.9			
19	12.5	10.7			
21	12.0	10.7			
23	11.0	10.4			
25	11.0	10.1			
27	10.5	9.6			
29	9.0	9.4			
31	8.0	8.9			
33	8.0	8.6			
35	8.0	8.4			
36	8.0	8.4			

Table B.1: continued

Depot Harbour Station 830
29-Apr-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.5	12.02	3.58	0	7.7	133
1.0	12.02	3.61	0	7.7	133
1.5	12.04	3.50	0	7.7	133
2.0	11.99	3.50	0	7.7	133
2.5	12.01	3.51	0	7.7	134
3.0	12.04	3.46	0	7.7	133
3.5	12.04	3.49	0	7.7	134
4.0	12.09	3.48	0	7.7	133
5.0	12.19	3.49	0	7.8	133
6.0	12.18	3.44	0	7.8	133
7.0	12.17	3.42	0	7.8	133
8.0	12.19	3.43	0	7.8	134
9.0	12.16	3.44	0	7.8	134
10.0	12.13	3.45	0	7.8	134
11.0	12.12	3.46	0	7.8	134
12.0	12.10	3.46	0	7.8	134
13.0	12.09	3.46	0	7.8	134
14.0	12.03	3.46	0	7.8	134
15.0	11.98	3.46	0	7.8	134
16.0	11.96	3.46	0	7.8	134
17.0	11.96	3.47	0	7.8	134
18.0	11.92	3.46	0	7.8	134
19.0	11.90	3.47	0	7.8	134
20.0	11.88	3.48	0	7.8	134
21.0	11.92	3.49	0	7.8	134
22.0	11.90	3.49	0	7.8	134
23.0	11.89	3.50	0	7.8	134
24.0	11.86	3.50	0	7.8	134
25.0	11.84	3.50	0	7.8	134
26.1	11.83	3.53	0	7.8	134
27.0	11.81	3.54	0	7.8	134
28.0	11.86	3.58	0	7.8	134
29.0	11.85	3.54	0	7.8	134
30.0	11.83	3.53	0	7.8	134
31.0	11.82	3.59	0	7.8	134
32.0	11.80	3.59	0	7.8	134
33.0	11.81	3.59	0	7.8	134
34.0	11.79	3.59	0	7.8	134

Depot Harbour Station 830
16-Jul-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.7	8.86	21.11	13	8.3	157
2.2	8.82	21.09	0	8.3	158
4.3	9.03	20.96	0	8.2	156
5.3	8.98	20.82	0	8.2	155
6.9	9.00	20.82	0	8.2	156
7.3	9.08	20.56	0	8.2	154
9.2	8.98	19.93	0	8.1	156
10.2	8.93	18.80	0	8.0	152
11.6	8.81	15.95	0	7.8	149
13.1	9.95	13.42	0	7.8	146
14.0	10.51	11.57	0	7.7	146
15.7	10.67	10.65	0	7.7	143
17.3	11.01	9.05	0	7.7	143
18.0	11.04	8.97	0	7.6	143
20.2	11.21	8.08	0	7.6	143
21.0	11.20	7.97	0	7.6	143
22.6	11.37	7.30	0	7.6	143
23.2	11.37	7.04	0	7.6	142
24.3	11.40	6.96	0	7.6	142
25.8	11.43	6.82	0	7.6	141
26.9	11.47	6.74	0	7.6	141
31.7	11.60	6.15	0	7.6	141

Table B.1: continued

Depot Harbour Station 830
15-Sep-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.5	8.9	22.1	3	8.5	158
3.0	8.9	22.1	3	8.5	158
5.4	8.9	22.1	2	8.5	158
7.9	8.8	21.8	2	8.4	160
8.5	8.9	21.4	2	8.4	161
9.0	8.5	20.4	2	8.1	171
10.3	8.4	18.7	1	7.9	177
12.0	8.5	17.4	2	7.7	178
13.0	8.5	16.9	1	7.7	176
13.8	8.7	15.4	1	7.6	172
15.4	8.9	13.5	1	7.6	162
16.2	9.1	12.1	1	7.5	159
17.2	9.4	10.9	2	7.5	157
18.8	10.0	8.5	2	7.5	154
20.6	10.4	7.7	2	7.5	153
22.1	10.5	7.2	1	7.5	153
24.1	10.6	6.9	1	7.5	152
25.6	10.6	6.8	1	7.5	152
27.6	10.6	6.7	1	7.4	151
29.7	10.7	6.2	1	7.4	151
31.0	10.7	5.8	2	7.4	150

Depot Harbour Station 831
29-Apr-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.6	11.8	5.8	0	7.6	134.0
1.1	11.7	5.7	0	7.7	134.1
2.4	11.5	5.6	0	7.7	133.9
3.3	11.6	5.6	0	7.7	133.6
4.1	11.6	5.3	0	7.7	133.6
5.0	11.2	5.1	0	7.7	133.9
6.0	11.5	5.0	0	7.7	133.8
6.9	11.7	4.7	0	7.7	133.5
7.2	11.8	4.6	0	7.7	133.3
8.0	11.8	4.3	0	7.8	133.5
9.0	11.9	4.1	0	7.8	133.4
9.3	11.8	4.1	0	7.8	133.5

Depot Harbour Station 831
16-Jul-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
1.1	8.50	21.62	0	8.2	153
2.5	8.57	21.60	0	8.2	152
3.9	8.44	20.94	0	8.2	159
5.0	8.49	20.89	0	8.2	159
6.1	8.63	20.46	0	8.2	158
7.5	8.45	20.31	0	8.2	151
9.1	7.67	18.70	0	7.8	153

Depot Harbour Station 831
15-Sep-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.9	8.90	22.14	0	8.4	163
1.6	8.93	22.12	0	8.4	163
2.6	8.94	22.13	1	8.4	164
3.6	8.93	22.15	0	8.4	164
4.4	8.91	22.14	0	8.4	164
5.1	8.92	22.14	1	8.4	164
5.8	8.87	22.14	1	8.4	164
6.7	8.85	22.13	1	8.4	164
7.9	8.84	22.10	1	8.4	164
9.0	8.73	22.02	1	8.3	165

Depot Harbour Station 831
11-Nov-99

Depth (m)	Temp (deg C)	DO (mg/L)	Turb(NTU)	pH	Cond (uS/cm)
0.2	7.75	9.60	0	7.4	130
1.7	7.76	9.53	0	7.4	131
4.0	7.77	9.23	0	7.4	132
5.1	7.74	9.42	0	7.4	132
7.4	7.70	9.56	0	7.4	131
9.9	7.64	9.48	0	7.4	131

Table B.1: continued

Depot Harbour Station 832
29-Apr-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.5	11.0	5.5	0	7.5	134.8
1.0	10.8	5.5	0	7.5	134.8
2.0	10.6	5.4	0	7.5	134.8
2.8	10.6	5.4	0	7.5	134.4
4.0	10.6	5.2	0	7.5	134.5
5.0	10.9	5.1	0	7.6	134.5
5.9	10.7	5.1	0	7.5	134.6
6.8	11.5	4.5	0	7.7	134.7
8.0	11.0	4.5	0	7.6	134.3
9.0	11.4	4.3	0	7.7	134.1

Depot Harbour Station 833
29-Apr-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.8	11.50	5.31	0	7.7	134
1.3	11.41	5.31	0	7.6	134
2.7	11.44	4.65	0	7.6	133
3.4	11.66	4.17	0	7.7	133
4.3	11.70	4.04	0	7.7	133
5.3	11.80	3.81	0	7.7	134
6.9	11.86	3.71	0	7.7	133
8.2	11.86	3.75	0	7.7	133
9.3	11.87	3.76	0	7.7	133
10.1	11.85	3.72	0	7.7	133
11.1	11.84	3.68	0	7.7	133
13.0	11.84	3.69	0	7.7	133
14.0	11.83	3.72	0	7.7	133
15.0	11.82	3.75	0	7.7	133
15.9	11.73	3.77	0	7.7	133
17.4	11.80	3.73	0	7.7	133
19.9	11.78	3.71	0	7.7	133
21.2	11.75	3.71	0	7.7	133
22.2	11.74	3.71	0	7.7	133
23.2	11.75	3.72	0	7.7	133
24.6	11.74	3.74	0	7.7	133
24.9	11.75	3.74	0	7.7	134
26.7	11.73	3.75	1	7.7	133
27.0	11.72	3.75	0	7.7	133

Depot Harbour Station 833
15-Sep-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
1.0	8.9	21.9	2	8.4	164
2.3	8.9	21.9	2	8.4	164
3.2	8.9	21.8	2	8.4	165
4.1	8.9	21.9	2	8.4	165
5.2	8.9	21.8	2	8.3	165
6.7	8.9	21.8	2	8.3	165
7.7	8.8	21.8	2	8.3	165
9.1	8.8	21.5	2	8.3	166
10.0	8.8	21.5	2	8.3	166
11.5	8.6	18.0	3	7.9	168
12.9	8.7	15.1	4	7.7	163
14.4	8.9	13.3	3	7.5	161
15.8	9.2	11.3	4	7.5	155
16.6	9.2	11.3	3	7.4	155
17.7	9.6	9.7	3	7.4	154
18.6	10.0	8.4	3	7.4	153
19.4	10.2	7.8	3	7.4	152
20.6	10.2	7.7	3	7.4	151
21.7	10.3	7.5	3	7.4	151
23.4	10.3	7.3	3	7.3	151
25.8	10.4	7.0	3	7.3	151
27.8	10.4	6.6	3	7.3	150
30.0	10.5	6.3	3	7.3	150

Table B.1: continued

Depot Harbour Station 834
29-Apr-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.5	11.98	3.76	0	7.7	132
1.5	11.87	3.68	0	7.6	132
3.1	11.79	3.64	0	7.7	132
8.5	11.87	3.57	0	7.7	133
9.9	11.88	3.57	0	7.7	133
12.5	11.77	3.62	0	7.7	133
15.0	11.80	3.62	0	7.7	133
20.0	11.83	3.63	0	7.7	133
25.0	11.82	3.59	0	7.7	133
30.0	11.81	3.60	0	7.7	133
35.1	11.85	3.61	0	7.7	133
40.0	11.82	3.61	0	7.7	133
45.0	11.73	3.61	0	7.7	133
49.9	11.73	3.63	0	7.7	134

Depot Harbour Station 834
16-Jul-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
1.5	8.51	21.40	0	8.3	151
4.0	8.69	21.32	0	8.3	151
6.1	8.70	21.29	0	8.3	151
8.4	8.74	20.54	0	8.3	151
10.7	8.27	18.05	0	7.9	150
13.1	9.13	15.37	0	7.8	149
14.8	10.21	11.47	0	7.8	145
16.7	10.81	9.27	0	7.8	143
18.8	10.93	8.65	0	7.7	143
20.8	11.11	7.85	0	7.7	143
23.7	11.05	7.36	0	7.7	142
25.9	11.22	6.89	0	7.6	142
28.0	11.16	6.58	0	7.6	142
30.5	11.17	6.36	0	7.6	141
34.0	11.38	5.78	0	7.6	140
36.5	11.44	5.51	0	7.6	140
39.6	11.57	5.34	0	7.6	140
44.0	11.41	5.34	0	7.6	140
46.0	11.51	5.15	2	7.6	140

Depot Harbour Station 834
15-Sep-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
1.1	8.8	21.7	1	8.4	165
2.2	8.9	21.7	1	8.3	165
3.4	8.9	21.7	1	8.4	165
4.9	8.9	21.7	1	8.4	165
7.0	8.9	21.6	1	8.3	166
8.4	8.9	21.6	1	8.3	166
10.1	8.8	21.5	1	8.3	167
11.0	8.2	18.8	2	7.9	178
11.9	8.5	16.2	3	7.6	166
12.9	8.8	14.5	3	7.6	171
13.7	8.8	14.0	3	7.5	167
14.4	8.9	12.7	3	7.5	159
15.0	9.1	11.9	3	7.5	157
15.7	9.1	11.6	3	7.4	157
16.8	9.3	10.6	3	7.4	156
18.2	10.0	8.4	3	7.4	153
19.5	10.1	8.0	3	7.4	153
20.7	10.3	7.6	3	7.4	152
22.2	10.4	7.2	3	7.4	151
23.3	10.4	7.1	3	7.4	151
26.2	10.6	6.5	3	7.4	150
29.2	10.8	5.9	3	7.4	150
34.5	11.0	5.3	2	7.4	148
37.0	11.0	5.1	2	7.4	148
41.7	11.1	4.7	2	7.3	148
45.9	11.1	4.5	2	7.3	147

Table B.1: continued

Depot Harbour Station 835
16-Jul-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
1.1	8.42	21.50	0	8.2	151
2.7	8.80	21.32	0	8.3	152
4.5	8.53	21.28	0	8.3	152
7.0	8.70	20.99	0	8.3	152
8.8	8.74	20.65	0	8.3	158
10.4	8.46	19.44	0	8.1	150
11.9	8.93	15.64	0	7.8	148
14.6	10.30	11.12	0	7.8	145
17.1	10.74	9.16	0	7.8	144
19.3	10.89	8.54	0	7.8	143
23.5	11.09	7.28	0	7.7	142
25.7	11.11	7.04	0	7.7	141
27.7	11.20	6.52	0	7.7	141
29.0	11.17	6.44	0	7.7	141
30.7	11.22	6.31	0	7.7	141
31.6	11.20	6.18	0	7.7	140

Depot Harbour Station 835
15-Sep-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.5	8.85	21.91	1	8.3	164
1.2	8.89	21.87	1	8.4	164
2.2	8.88	21.87	1	8.4	164
4.8	8.83	21.88	1	8.4	164
7.5	8.80	21.78	1	8.4	165
9.5	8.67	21.65	1	8.3	166
10.2	8.61	21.02	1	8.2	170
11.0	8.45	19.21	2	8.0	168
11.8	8.47	17.09	2	7.8	166
13.7	8.76	14.26	3	7.6	166
14.6	8.95	13.32	3	7.5	167
15.4	8.96	12.39	3	7.5	160
17.6	9.29	10.85	2	7.4	156
18.9	9.97	8.60	2	7.4	153
20.0	10.18	7.75	2	7.4	152
22.4	10.31	7.51	2	7.4	152
24.7	10.34	7.34	2	7.4	152
27.6	10.42	6.64	2	7.4	151
29.5	10.65	5.91	2	7.4	150
31.2	10.50	5.74	2	7.4	150

Table B.1: continued

Depot Harbour Station 836
16-Jul-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
1.0	8.7	21.5	0	8.3	153.5
2.9	8.5	21.4	0	8.3	153.0
4.8	8.6	21.4	0	8.3	152.4
6.4	8.4	21.2	0	8.1	151.1
8.1	8.8	20.8	0	8.3	157.0
10.3	8.3	18.3	0	7.9	149.7
13.0	9.7	13.6	0	7.8	146.1
15.6	10.7	9.9	0	7.8	143.7
18.3	11.0	8.2	0	7.8	142.2
21.0	11.1	7.6	0	7.7	141.8
22.7	11.1	7.3	0	7.7	141.4
24.9	11.1	6.8	0	7.7	140.8
27.5	11.2	6.5	0	7.7	140.9
30.3	11.3	6.2	0	7.7	140.1
32.5	11.3	6.0	0	7.6	140.2
35.9	11.3	5.7	0	7.6	139.6
37.5	11.4	5.7	0	7.6	139.3
40.6	11.4	5.4	0	7.6	138.9
42.7	11.4	5.3	0	7.6	139.3
48.9	11.5	5.1	0	7.6	139.1

Depot Harbour Station 836
15-Sep-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.8	8.76	21.93	1	8.4	164
1.8	8.76	21.92	2	8.4	164
3.1	8.77	21.92	2	8.4	164
5.0	8.71	21.92	2	8.3	165
7.7	8.78	21.87	1	8.4	165
10.1	8.38	20.50	2	8.1	165
11.2	8.23	17.76	1	7.6	165
13.0	8.69	15.16	2	7.5	170
14.1	8.78	14.14	2	7.5	166
15.7	8.91	12.68	2	7.5	161
17.3	9.45	10.74	2	7.5	155
18.7	9.85	9.12	2	7.4	154
19.9	10.09	8.43	2	7.4	153
21.2	10.33	7.74	2	7.4	153
22.5	10.34	7.61	2	7.4	153
24.0	10.37	7.46	2	7.4	152
25.6	10.44	7.09	2	7.4	152
27.2	10.54	6.71	1	7.4	151
29.4	10.72	5.94	2	7.4	150
30.9	10.77	5.68	2	7.4	150
35.5	11.02	5.24	1	7.4	149
37.5	11.03	5.08	1	7.4	149
39.9	11.12	4.87	2	7.4	148
42.4	11.16	4.72	1	7.4	148
44.2	11.25	4.56	1	7.4	147
45.9	11.25	4.48	1	7.4	147
47.6	11.23	4.46	1	7.4	147

Table B.1: continued

Depot Harbour Station 837
15-Sep-99

Depth (m)	D.O. (mg/L)	Temp (C)	Turb (NTU)	pH	Cond (uS/cm)
0.5	8.8	21.7	1	8.3	165
1.0	8.8	21.7	5	8.3	165
2.3	8.8	21.7	1	8.3	165
4.5	8.8	21.7	1	8.4	165
6.8	8.8	21.7	1	8.4	165
8.8	8.8	21.6	1	8.4	166
10.7	8.3	19.4	3	7.9	177
11.7	8.4	16.0	2	7.7	165
12.5	8.7	14.8	3	7.6	162
13.0	8.8	14.4	3	7.6	160
13.7	9.0	12.8	3	7.5	160
14.5	9.0	12.3	2	7.5	157
15.5	9.1	11.6	2	7.4	156
16.8	9.4	10.3	2	7.4	156
18.3	9.9	8.7	2	7.4	153
20.3	10.2	8.0	3	7.4	153
22.1	10.4	7.3	2	7.4	152
24.7	10.4	6.9	2	7.4	151
28.1	10.7	6.1	2	7.4	150
30.7	10.8	5.7	2	7.4	149
34.9	11.0	5.2	2	7.4	149
36.5	11.2	5.4	0	7.9	124.1
40.1	11.1	4.8	2	7.4	148
41.1	11.3	5.0	0	7.8	124.2
45.5	11.2	4.5	2	7.4	147
46.0	11.4	4.7	0	7.8	124.1
51.2	11.5	4.6	0	7.8	124.2
57.3	11.6	4.5	0	7.8	122.2
62.6	11.6	4.4	0	7.7	123.1
67.3	11.5	4.4	0	7.7	124.1
68.5	11.5	4.4	0	7.7	124.2

Appendix C

Water Quality Results

Table D.1 Water Quality Results for Eagle Island Reference Site and Aquaculture Sites

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Eagle Island Reference Site 2000, Depth Integrated Samples																			
STN 311	04/18/00	15.3	0.004	ND	0.14	0.004	0.271	1.7	15.0	1.6	7.70	171	1.5	0.64	6.8	4	0.6		
STN 311	04/18/00	15.0	0.004	ND	0.14	0.004	0.268	1.6	15.4	1.6	7.07	174	1.5	0.57		4	0.8		
STN 311	04/18/00	15.2	0.004	ND	0.14	0.004	0.266	1.7	14.8	1.4	7.77	174	2.0	0.64	6.5	6	0.6		
Bedford Harbour 1999, Grab Samples																			
STN 336	05/02/99	1.5	0.004	0.0010	0.14	ND	0.250	2.4	15.4	0.8	7.97	174	0.5	0.40	8.6	8	1.0		
STN 336	07/10/99	1.5	0.008	0.0010	0.20	0.004	0.215	1.9	15.6	1.2	7.74	175	2.0	0.89		3	0.4		
STN 336	09/11/99	1.5	0.008	ND	0.14	0.008	0.150	1.9	15.8	2.6	8.17	174	0.5	0.73	5.8	6	0.4		
STN 336	11/08/99	1.5	0.008	0.0030	0.16	0.008	0.229	1.6	15.0	1.8	8.10	163	1.0	0.61	6.0	3	1.2		
STN 336	05/02/99	18.0	0.006	0.0015	0.22	ND	0.250	2.1	15.0		7.90	175	1.5	0.71		5	0.4		
STN 336	07/10/99	17.3	0.010	0.0010	0.22	0.010	0.225	2.0	15.6		8.00	175	1.5	1.15		6	0.4		
STN 336	09/11/99	17.3	0.004	0.0010	0.12	0.008	0.237	1.8	17.0		7.89	176	1.5	1.12		6	0.4		
STN 336	11/08/99	17.5	0.004	0.0040	0.16	0.014	0.236	1.4	15.0		8.11	162	1.0	0.71		3	1.2		
STN 337	05/02/99	1.5	ND	0.0015	0.06	ND	0.245	2.2	15.4	0.8	8.00	176	1.0	0.45	8.0	ND	0.6		
STN 337	07/10/99	1.5	0.004	ND	0.18	0.016	0.205	1.7	15.8	1.6	8.12	176	1.5	1.18		3	ND		
STN 337	09/11/99	1.5	0.006	0.0050	0.14	0.016	0.221	1.5	14.8	1.4	8.14	162	1.0	0.55	4.6	6	1.4		
STN 337	11/08/99	1.5	0.008	0.0010	0.16	0.008	0.136	2.4	15.4	2.2	8.16	177	1.0	0.86	7.3	8	0.6		
STN 337	05/02/99	9.3	0.006	0.0015	0.18	ND	0.240	1.9	15.4		8.05	176	0.5	0.60		6	0.6		
STN 337	07/10/99	7.4	0.004	ND	0.16	0.012	0.200	1.8	16.0		7.98	175	2.0	1.23		4	0.2		
STN 337	09/11/99	8.7	0.016	0.0010	0.16	0.006	0.128	2.0	15.8		8.19	174	1.0	0.85		6	0.4		
STN 337	11/08/99	8.4	ND	0.0020	0.14	0.018	0.230	1.4	14.4		8.13	162	1.0	0.59		6	1.0		
STN 337	07/20/99	FB 1m	0.006	ND	0.16	0.022	0.185	1.7	16.4		7.99	177	1.5		5.5		0.4	116	116

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Bedford Harbour 1999, Grab Samples																			
STN 338	05/02/99	1.5	0.004	0.0015	0.14	ND	0.250	1.8	15.6	1.0	8.04	178	1.0	0.42	7.1	4	0.4		
STN 338	07/10/99	1.5	0.008	ND	0.16	0.026	0.200	1.9	16.0	1.6	8.08	175	1.5	1.21		3	ND		
STN 338	09/11/99	1.5	0.008	0.0010	0.16	0.006	0.137	1.9	15.4	2.4	8.18	174	1.0	0.90	4.7	6	0.4		
STN 338	11/08/99	1.5	0.004	0.0040	0.14	0.010	0.218	1.8	14.6	1.6	8.14	162	1.0	0.66		4	1.2		
STN 338	05/02/99	15.5	0.016	0.0020	0.22	0.018	0.235	2.0	15.6		7.99	176	1.0	0.55		6	0.8		
STN 338	07/10/99	15.0	0.006	ND	0.20	0.014	0.200	1.8	16.2		8.00	177	2.0	1.38		3	0.4		
STN 338	09/11/99	15.0	0.004	0.0010	0.16	0.008	0.136	2.0	15.6		8.21	175	1.0	0.83		11	0.6		
STN 338	11/08/99	15.0	0.004	0.0040	0.14	0.016	0.227	1.6	14.8		8.14	162	ND	0.57		7	1.4		
STN 338	07/20/99	FB 1m		0.6100	1.84	0.720	ND	3.2	20.0		7.72	201	1.5		5.5		6.8	132	132
STN 339	05/02/99	1.5	0.006	0.0015	0.20	0.006	0.250	2.0	15.6	1.0	8.00	176	1.0	0.42	7.0	5	0.4		
STN 339	07/10/99	1.5	0.006	ND	0.16	0.008	0.200	1.8	15.8	1.6	8.08	175	2.0	1.31		3	0.2		
STN 339	09/11/99	1.5	0.012	0.0010	0.16	0.016	0.136	2.0	15.8	2.6	8.11	174	1.0	0.90	4.1	6	0.6		
STN 339	11/08/99	1.5	0.004	0.0040	0.12	0.012	0.225	1.5	14.4	1.6	8.12	165	1.5	0.74		3	1.4		
STN 339	05/02/99	15.0	0.010	0.0020	0.20	0.004	0.240	1.9	15.4		7.98	175	1.5	0.60		8	0.6		
STN 339	07/10/99	15.9	0.024	ND	0.36	0.016	0.205	1.9	17.0		7.59	179	3.0	2.33		6	0.4		
STN 339	09/11/99	15.3	0.028	0.0020	0.20	0.054	0.178	1.7	17.0		7.75	174	2.0	1.42		6	0.6		
STN 339	11/08/99	16.2	0.008	0.0050	0.16	0.014	0.220	1.6	14.6		8.12	163	1.0	0.81		10	1.6		
STN 339	07/20/99	FB 1m		0.6350	1.78	0.658	ND	3.0	20.6		7.74	200	2.0		5.1		6.0	132	130

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Bedford Harbour 1999, Grab Samples																			
STN 340	07/10/99	1.5	0.006	ND	0.16	0.006	0.200	1.9	15.8	1.4	8.07	176	2.0	1.19		3	0.2		
STN 340	09/11/99	1.5	0.016	0.0010	0.16	0.016	0.137	1.9	16.2	2.4	8.13	173	1.0	0.92	3.9	10	0.6		
STN 340	11/08/99	1.5	0.004	0.0030	0.16	0.016	0.218	1.4	14.6	1.4	8.12	162	1.0	0.61		4	1.4		
STN 340	05/02/99	13.5	0.008	0.0015	0.20	0.008	0.245	1.8	15.2		7.99	176	1.0	0.51		10	0.4		
STN 340	07/10/99	11.5	0.006	ND	0.18	0.010	0.200	1.9	16.0		8.12	175	2.0	1.26		3	0.2		
STN 340	09/11/99	10.0	0.016	0.0010	0.18	0.024	0.137	1.9	16.2		8.11	173	1.5	0.93		6	0.4		
STN 340	11/08/99	14.3	0.008	0.0050	0.18	0.024	0.224	1.5	14.8		8.09	163	1.0	0.73		4	1.6		
STN 340	07/20/99	FB 1m	0.092	0.0500	0.56	0.290	0.070	1.8	18.0		7.65	184	4.0		5.0		1.4	124	120
STN 342	07/10/99	1.5	0.004	ND	0.16	0.004	0.215	1.8	15.8	1.4	7.97	176	1.5	0.81	7.3	2	ND		
STN 342	09/11/99	1.5	0.006	ND	0.14	0.008	0.144	1.9	15.8	2.4	8.18	174	1.0	0.53	6.8	5	0.4		
STN 342	11/08/99	1.5	ND	0.0020	0.12	0.012	0.223	1.5	14.6	1.6	8.10	161	0.5	0.58		4	1.2		
STN 342	07/10/99	13.2	0.006	ND	0.16	0.006	0.210	1.8	15.8		8.12	176	1.5	1.01		6	0.2		
STN 342	09/11/99	14.0	0.004	ND	0.16	0.008	0.144	2.0	15.8		8.19	173	0.5	0.66		5	0.4		
STN 342	11/08/99	17.2	0.006	0.0050	0.14	0.012	0.224	1.5	14.6		8.12	161	1.0	0.64		2	1.4		
Bedford Harbour 2000, Depth Integrated Samples																			
STN 336	04/18/00	18.0	0.004	ND	0.14	ND	0.221	1.7	15.0		8.06	173	1.5	0.47	7.3	3	0.8		
STN 337	04/18/00	8.5	ND	ND	0.16	0.004	0.224	1.7	15.0		8.06	170	1.5	0.47	7.4	5	0.6		
STN 338	04/18/00	15.5	0.004	ND	0.16	ND	0.217	1.7	15.0	1.6	8.08	168	1.5	0.44	7.2	6	1.0		
STN 339	04/18/00	15.3	0.004	ND	0.16	ND	0.219	1.8	15.2	1.6	8.06	168	1.5	0.44	6.7	2	0.6		
STN 340	04/18/00	13.4	ND	ND	0.16	ND	0.215	1.7	15.0	1.6	8.01	169	1.5	0.43	7.6	4	0.4		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Bedford Harbour 1999, Composite Samples																			
STN 337	06/01/99	10	0.010	0.0015	0.20	0.038	0.195	1.8	15.4		7.89	176	1.5					116	114
STN 337	07/20/99	10	0.008	ND	0.20	0.042	0.180	1.8	16.2		7.95	177	1.5		5.5			116	116
STN 337	09/27/99	10	0.010	ND	0.20	0.010	0.147	1.8	15.8		8.11	169	1.0		4.8			112	110
STN 338	06/01/99	10	ND	0.0010	0.16	0.018	0.195	1.8	15.6		7.92	177	1.5					116	116
STN 338	07/20/99	10	0.004	0.0010	0.16	0.032	0.185	1.7	16.2		7.88	177	1.0		5.5			116	116
STN 338	09/27/99	10	0.008	ND	0.20	0.010	0.145	1.6	15.8	1.6	8.06	167	1.0		4.4		0.8	110	110
Bedford Harbour 1999, Composite Samples																			
STN 339	06/01/99	10	ND	ND	0.16	0.008	0.195	1.9	15.6	1.4	7.95	175	1.5		4.0		0.6	116	114
STN 339	07/20/99	10	0.016	0.0035	0.20	0.030	0.185	1.7	16.0	1.2	7.98	180	1.0		5.1		0.4	118	116
STN 339	09/27/99	10	0.010	ND	0.22	0.004	0.147	1.7	15.8		8.06	166	1.0		4.0			110	108
STN 340	06/01/99	10	0.010	ND	0.18	0.014	0.195	1.8	15.6		7.94	175	0.5					114	114
STN 340	07/20/99	10	0.008	0.0035	0.18	0.018	0.190	1.7	16.4		7.94	177	1.5		5.0			116	116
STN 340	09/27/99	10	0.008	ND	0.20	0.004	0.146	1.6	15.8		8.08	166	1.5		3.9			110	108
STN 342	06/01/99	10	0.010	ND	0.16	ND	0.205	1.8	15.8	1.0	7.94	175	1.0		4.5		0.4	116	114
STN 342	07/20/99	8	0.004	0.0020	0.16	0.010	0.190	1.5	16.2	1.0	8.13	177	1.0		5.0		0.4	116	116
STN 342	09/27/99	10	0.006	ND	0.16	0.010	0.157	1.6	15.8	1.6	8.11	166	1.0		4.5		0.6	110	108
STN 342	07/20/99	FB 1m	0.006	0.0015	0.12	0.014	0.215	1.5	16.0		8.00	177	1.5		5.0			116	116

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Eastern Island 1999, Grab Samples																			
STN 330	05/02/99	1.5	0.006	0.0010	0.20	0.016	0.225	2.4	14.8	1.6	7.86	166	1.0	0.48	6.0	6.0	0.4		
STN 330	07/11/99	1.5	0.012	0.0015	0.18	0.032	0.200	1.8	15.4	1.8	7.94	175	1.5	0.95		6.0	0.4		
STN 330	09/12/99	1.5	ND	0.0010	0.16	0.022	0.142	1.8	16.0	1.6	8.13	175	1.0	0.68	5.3	11.0	0.6		
STN 330	11/08/99	1.5	0.008	0.0040	0.20	0.038	0.210	1.6	15.2	1.4	8.02	162	1.0	0.57	8.1	3.0	1.4		
STN 330	05/02/99	11.0	0.008	0.0010	0.20	0.006	0.235	1.9	15.0		7.94	169	1.5	0.94		8.0	0.2		
STN 330	07/11/99	16.6	0.024	0.0085	0.24	0.036	0.200	1.8	15.6		7.93	174	2.0	1.24		8.0	0.6		
STN 330	09/12/99	16.3	0.016	0.0030	0.20	0.038	0.154	1.8	16.6		7.99	176	2.0	1.30		6.0	0.6		
STN 330	11/08/99	16.2	0.012	0.0050	0.20	0.040	0.220	1.6	15.2		8.01	165	1.0	0.72		4.0	1.6		
STN 331	05/02/99	1.5	0.006	0.0010	0.20	0.006	0.225	2.0	14.4	1.6	7.93	168	1.0	0.43	7.0	7.0	0.4		
STN 331	07/11/99	1.5	0.012	ND	0.24	0.030	0.195	1.8	15.8	2.0	7.99	172	1.5	0.89		6.0	0.4		
STN 331	09/12/99	1.5	0.012	0.0010	0.18	0.036	0.143	1.8	15.8	2.2	8.06	175	1.0	0.77	4.8	9.0	0.6		
STN 331	11/08/99	1.5	0.008	0.0060	0.22	0.048	0.211	1.7	15.2	1.4	7.96	164	1.0	0.72	7.3	2.0	1.6		
STN 331	05/02/99	13.0	0.012	0.0010	0.22	0.014	0.230	1.9	14.8		7.91	171	1.5	0.64		4.0	0.6		
STN 331	07/11/99	16.7	0.020	0.0035	0.20	0.034	0.200	1.8	15.4		7.92	173	2.0	1.25		4.0	0.4		
STN 331	09/12/99	16.5	0.020	0.0030	0.24	0.058	0.154	1.8	16.4		7.92	175	1.5	1.18		5.0	0.4		
STN 331	11/08/99	16.0	0.008	0.0060	0.20	0.028	0.215	1.7	15.2		8.02	162	0.5	0.61		3.0	1.4		
STN 332	05/02/99	1.5	0.006	0.0010	0.20	ND	0.225	1.9	14.2	1.6	7.74	166	1.0	0.41	8.1	4.0	0.4		
STN 332	07/11/99	1.5	0.016	0.0030	0.28	0.034	0.205	1.8	15.6	2.0	8.01	172	2.0	0.86		4.0	0.8		
STN 332	09/12/99	1.5	0.004	0.0010	0.16	0.016	0.150	2.1	16.6	2.0	8.11	174	1.0	0.76	5.1	9.0	0.6		
STN 332	11/08/99	1.5	0.004	0.0040	0.16	0.028	0.213	1.9	15.2	1.4	8.05	161	1.0	0.57	7.6	2.0	1.2		
STN 332	05/02/99	17.0	0.016	0.0020	0.22	0.014	0.235	1.8	14.8		7.89	169	1.0	0.68		3.0	0.6		
STN 332	07/11/99	14.0	0.020	0.0065	0.20	0.024	0.205	1.8	15.4		7.85	172	2.0	1.15		6.0	0.4		
STN 332	09/12/99	13.5	0.008	ND	0.18	0.012	0.150	2.0	16.2		8.12	175	1.0	0.82		6.0	0.4		
STN 332	11/08/99	11.0	ND	0.0020	0.16	0.020	0.213	1.8	15.2		8.05	161	1.0	0.58		9.0	1.4		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Eastern Island 1999, Grab Samples																			
STN 333	05/02/99	1.5	0.008	0.0020	0.20	0.010	0.225	1.9	14.6	1.6	7.93	165	1.0	0.41	7.2	8.0	0.6		
STN 333	07/11/99	1.5	0.016	0.0035	0.26	0.072	0.200	1.8	15.4	2.0	7.93	173	1.5	0.92		4.0	0.4		
STN 333	09/12/99	1.5	0.012	ND	0.16	0.020	0.145	1.8	16.0	2.2	8.07	177	1.0	0.76	5.8	9.0	0.6		
STN 333	11/08/99	1.5	0.004	0.0040	0.18	0.032	0.214	1.7	15.6	1.4	8.04	161	1.0	0.57	8.6	2.0	1.2		
STN 333	05/02/99	18.0	0.008	0.0020	0.20	0.004	0.240	2.2	14.8		7.94	169	1.5	0.57		3.0	0.8		
STN 333	07/11/99	14.8	0.026	0.0065	0.28	0.074	0.200	1.8	15.2		7.88	173	2.0	1.09		7.0	0.6		
STN 333	09/12/99	13.6	0.008	0.0010	0.14	0.012	0.150	2.1	15.8		8.06	175	2.0	1.43		8.0	0.6		
STN 333	11/08/99	15.4	0.008	0.0050	0.20	0.036	0.219	1.8	15.2		8.02	162	1.0	0.59		6.0	1.4		
STN 333	07/19/99	FB 1m	0.164	0.1050	0.60	0.210	0.140	2.0	17.2		7.40	178	2.5		4.5		0.8	118	116
STN 334	05/02/99	1.5	0.006	0.0010	0.20	0.010	0.230	2.0	14.6	1.6	7.90	167	1.0	0.40	8.1	ND	0.6		
STN 334	07/11/99	1.5	0.012	0.0030	0.20	0.036	0.200	1.8	15.4	2.0	7.97	173	2.0	0.82		6.0	0.4		
STN 334	09/12/99	1.5	0.012	0.0010	0.20	0.034	0.145	1.8	16.0	2.2	8.06	174	0.5	0.74	5.1	5.0	0.8		
STN 334	11/08/99	1.5	0.004	0.0030	0.20	0.044	0.194	1.6	14.8	1.6	8.01	162	1.0	0.67	8.5	4.0	1.2		
STN 334	05/02/99	17.0	0.012	0.0015	0.20	0.008	0.240	1.9	15.2		7.93	173	1.5	0.64		4.0	0.8		
STN 334	07/11/99	16.6	0.030	0.0120	0.02	0.032	0.200	1.7	15.6		7.78	175	2.0	1.27		4.0	0.4		
STN 334	09/12/99	16.8	0.016	0.0030	0.20	0.036	0.150	1.9	16.6		7.97	175	1.5	1.15		6.0	0.4		
STN 334	11/08/99	17.0	0.016	0.0020	0.32	0.016	0.219	1.6	15.0		8.08	163	1.0	0.61		2.0	1.4		
STN 335	05/02/99	1.5	0.004	0.0010	0.18	ND	0.225	2.3	14.2	1.4	7.97	167	1.0	0.41	7.1	4.0	0.6		
STN 335	07/11/99	1.5	0.004	ND	0.16	0.006	0.200	1.7	15.4	1.8	8.08	173	1.5	0.70		5.0	ND		
STN 335	09/12/99	1.5	0.008	0.0010	0.16	0.004	0.140	1.8	15.8	2.0	8.14	175	0.5	0.61	6.2	6.0	0.4		
STN 335	11/08/99	1.5	0.004	ND	0.16	0.012	0.244	2.6	15.0	1.4	8.06	162	1.0	0.68	7.0	8.0	1.4		
STN 335	05/02/99	14.3	0.010	0.0015	0.18	ND	0.245	1.9	14.8		8.02	171	3.0	0.62		5.0	0.6		
STN 335	07/11/99	14.4	0.006	ND	0.16	0.004	0.205	1.7	15.4		7.94	172	1.5	0.85		2.0	0.4		
STN 335	09/12/99	14.0	0.006	0.0010	0.12	0.008	0.153	1.9	15.6		8.13	177	1.0	0.64		6.0	0.4		
STN 335	11/08/99	14.6	0.012	0.0010	0.32	0.014	0.229	1.8	14.8		8.07	162	1.5	0.64		3.0	1.0		
STN 335	07/19/99	FB 1m	0.006	ND	0.16	0.006	0.175	1.7	16.4		8.16	175	1.0		5.3		0.2	116	114

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Eastern Island 2000, Depth Integrated Samples																			
STN 330	04/18/00	17.4	0.006	ND	0.20	0.012	0.212	1.8	14.6		8.05	170	1.0	0.49	8.0	8	0.6		
STN 331	04/18/00	16.3	0.006	ND	0.16	0.004	0.214	1.8	14.6	1.6	8.06	167	1.5	0.42	8.1	3	1.0		
STN 332	04/18/00	11.3	ND	ND	0.16	0.008	0.214	1.7	19.2	1.6	6.96	169	2.0	0.37	7.4	5	8.0		
STN 333	04/18/00	14.3	0.006	ND	0.18	0.004	0.214	1.7	14.8	1.6	8.00	166	1.0	0.44	8.6	4	0.6		
Eastern Island 1999, Composite Samples																			
STN 330	07/19/99	1	0.008	ND	0.20	0.020	0.180	1.7	15.8	1.4	8.11	173	0.5		5.5		0.4	112	112
STN 330	06/01/99	10	0.010	0.0020	0.22	0.040	0.205	1.8	15.4		7.89	174	1.0					114	112
STN 330	07/19/99	8	0.012	ND	0.24	0.066	0.175	1.6	16.0	1.8	7.81	174	2.0		5.5		0.4	116	112
STN 330	09/27/99	10	0.010	ND	0.20	0.020	0.152	1.6	15.2		8.03	168	1.0		4.0			110	108
STN 331	06/01/99	1	0.010	0.0030	0.20	0.034	0.205	1.8	15.4		7.85	176	1.0					114	114
STN 331	09/27/99	1	0.016	ND	0.28	0.032	0.151	1.7	16.4	2.0	7.96	169	2.0		5.0		0.6	112	110
STN 331	07/19/99	8	0.012	ND	0.20	0.038	0.180	1.8	15.6		8.01	173	1.0		5.5			112	112
STN 331	09/27/99	10	0.008	ND	0.24	0.004	0.154	1.6	16.2	1.8	8.03	170	2.0		5.0		0.6	112	110
STN 332	06/01/99	10	0.010	0.0025	0.20	0.044	0.210	1.7	15.4		7.86	176	1.0					116	116
STN 332	07/19/99	8	0.004	ND	0.18	0.010	0.180	1.8	15.8		8.10	174	1.0		5.0			114	112
STN 332	09/27/99	10	0.014	ND	0.28	0.010	0.153	1.7	15.8		8.07	167	1.5		5.0			110	108
STN 333	06/01/99	1	0.010	0.0020	0.20	0.040	0.205	1.7	15.4	1.4	7.89	174	1.5		4.6		0.6	114	112
STN 333	07/19/99	1	0.006	ND	0.20	0.012	0.185	1.8	16.0	1.8	8.10	175	1.0		4.5		0.6	114	114
STN 333	09/27/99	1	0.004	ND	0.16	0.010	0.152	1.4	15.6	1.4	8.11	167	1.5		4.8		0.4	110	108
STN 333	06/01/99	10	0.010	0.0020	0.22	0.050	0.210	1.7	15.2	1.0	7.87	175	1.5		4.6		0.6	116	114
STN 333	07/19/99	8	0.008	ND	0.20	0.018	0.180	2.0	15.6	1.4	8.05	175	1.0		4.5		0.4	114	114
STN 333	09/27/99	10	0.018	ND	0.56	0.010	0.153	1.7	16.2	1.8	8.06	167	1.5		4.8		0.8	110	108

Table D.1 Continued

Eastern Island 1999, Composite Samples

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
STN 335	06/01/99	1	ND	0.0015	0.16	0.014	0.200	1.7	15.4	1.0	7.95	175	1.0		4.8		0.4	114	114
STN 335	07/19/99	1	0.008	ND	0.20	0.004	0.175	1.7	15.4	1.4	8.24	174	1.0		5.3		0.4	114	112
STN 335	09/27/99	1	0.006	ND	0.16	0.010	0.153	1.8	15.4	1.2	8.13	170	1.0		5.3		0.6	110	110
STN 335	06/01/99	10	ND	0.0015	0.16	0.016	0.205	1.8	15.2	1.2	7.97	174	1.0		4.8		0.4	114	112
STN 335	07/19/99	8	0.006	ND	0.18	0.004	0.175	1.8	15.8	1.4	8.10	174	1.0		5.3		0.4	114	112
STN 335	09/27/99	10	0.008	ND	0.16	0.010	0.153	1.7	15.6	1.6	8.06	168	1.0		5.3		0.6	110	108

LaCloche Channel 1999, Grab Samples

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
STN 326	05/04/99	1.5	0.006	0.0025	0.16	ND	0.135	2.8	15.8	1.0	8.10	176	1.0	0.39	7.5	4	0.4		
STN 326	07/14/99	1.5	0.008	0.0040	0.20	0.008	0.055	2.2	15.2	1.4	8.05	171	0.5	0.41	7.2	4	0.4		
STN 326	09/13/99	1.5	0.020	0.0180	0.20	0.004	0.016	2.2	15.2	2.2	8.21	159	0.5	0.54	4.4	15	0.8		
STN 326	11/09/99	1.5	0.006	0.0010	0.20	0.020	0.026	1.8	13.6	3.0	7.97	157	1.0	0.41	7.0	6	1.0		
STN 326	05/04/99	32.7	0.040	0.0025	0.28	ND	0.080	2.3	15.8		8.02	176	3.0	0.72		5	0.8		
STN 326	07/14/99	32.7	0.024	0.0095	0.28	0.004	0.275	2.1	16.4		7.49	176	1.5	0.93		6	ND		
STN 326	09/13/99	31.3	0.032	0.0210	0.20	0.040	0.277	2.2	17.2		7.49	164	0.5	0.55		8	1.6		
STN 326	11/09/99	34.6	0.012	0.0010	0.20	0.024	0.030	1.7	13.6		7.95	162	1.5	0.67		7	0.8		
STN 326	09/28/99	FB 1m	0.044	0.0220	0.28	0.056	0.190	2.0	17.4		7.27	177	2.0				0.6	116	116
STN 2	09/28/99	FB 1m	0.068	0.0430	0.28	0.092	0.213	2.0	17.4		7.21	177	2.0				0.6	116	116
STN 11	09/28/99	FB 1m	0.012	ND	0.22	ND	0.209	2.0	16.2		7.43	174	1.5		5.1		ND	114	112

LaCloche Channel 2000, Depth Integrated Samples

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
STN 326	04/19/00	31.8	0.010	0.0010	0.26	0.008	0.077	1.8	14.6	1.2	8.00	165	1.0	0.32	8.2	5	0.6		
STN 326	04/19/00	31.8	0.006	0.0010	0.20	0.012	0.081	1.8	14.6	1.4	8.03	172	1.5	0.32		3	0.6		
STN 326	04/19/00	31.6	0.008	0.0010	0.16	0.012	0.083	2.0	14.4	1.4	8.11	172	1.0	0.32		4	0.8		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
LaCloche Channel 1999, Composite Samples																			
STN 326	05/26/99	1	ND	ND	0.24	0.020	0.085	2.0	15.2	0.8	8.04	167	1.0		5		1.6	110	108
STN 326	07/19/99	1	0.004	ND	0.20	0.008	0.035	2.0	15.4	1.2	8.12	171	0.5		7.8		0.4	112	112
STN 326	09/28/99	1	0.012	ND	0.20	0.012	0.010	1.9	15.6	2.2	8.05	169	1.5				0.4	112	110
STN 326	05/26/99	8	ND	ND	0.20	0.026	0.085	1.9	15.4	1.0	8.03	168	1.0		5		1.8	110	108
STN 326	07/19/99	8	0.006	ND	0.20	0.006	0.055	1.9	16.6	1.6	8.08	173	0.5		7.8		0.4	112	112
STN 326	09/28/99	8	0.012	0.0010	0.22	0.016	0.010	1.9	15.6	2.2	8.03	169	2.0				0.6	112	110
STN 2	05/26/99	1	ND	ND	0.24	0.024	0.085	2.0	15.4	1.0	8.06	170	1.0		5.1		1.6	112	110
STN 2	07/19/99	1	0.006	ND	0.20	0.008	0.040	2.0	15.6	1.0	8.14	172	1.5		8.0		0.4	114	112
STN 2	09/28/99	1	0.008	0.0010	0.20	0.014	0.010	2.1	15.4	2.6	8.08	170	1.0				0.6	110	110
STN 2	05/26/99	8	ND	0.0015	0.20	0.030	0.085	2.0	15.4	1.2	8.03	170	1.0		5.1		1.2	112	110
STN 2	07/19/99	8	0.008	ND	0.20	0.004	0.065	2.1	16.0	1.4	8.09	176	1.0		8.0		0.4	114	114
STN 2	09/28/99	8	0.008	0.0010	0.20	0.014	0.011	2.0	15.4	2.2	8.03	171	1.5				0.6	112	112
STN 7	05/26/99	8	ND	ND	0.22	0.026	0.085	2.0	15.4		8.03	167	1.0					110	108
STN 7	07/19/99	8	0.008	ND	0.24	0.016	0.040	2.0	15.4		8.02	172	0.5		6.8			112	112
STN 7	09/28/99	8	0.012	ND	0.20	0.014	0.019	1.9	14.8		8.05	170	1.0					110	110
STN 9	05/26/99	8	0.004	ND	0.20	0.024	0.085	1.9	15.2		8.00	167	1.0					110	108
STN 9	07/19/99	8	0.006	0.0010	0.20	0.014	0.070	2.2	15.8		8.07	175	ND		8.0			114	114
STN 9	09/28/99	8	0.008	ND	0.20	0.012	0.033	2.1	15.8		8.08	174	0.5					114	112
STN 11	05/26/99	1	ND	ND	0.20	0.024	0.075	2.1	14.6	1.2	8.05	166	1.0		5.1		1.6	110	108
STN 11	07/19/99	1	0.004	ND	0.20	0.014	0.045	2.1	14.8	1.0	8.06	171	ND				0.4	112	112
STN 11	09/28/99	1	0.012	ND	0.20	0.008	0.016	2.2	15.2	1.8	8.10	167	ND				1.8	110	108
STN 11	05/26/99	8	ND	ND	0.20	0.024	0.075	2.0	14.6	1.4	8.04	164	1.0		5.1		1.8	108	108
STN 11	07/19/99	8	0.006	ND	0.20	0.030	0.035	2.0	15.2	1.4	8.00	171	ND		7.0		0.4	112	112
STN 11	09/28/99	8	0.012	ND	0.20	0.008	0.014	2.0	14.8	1.6	8.09	168	ND				0.6	110	108

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Buzwah 1999, Grab Water Samples																			
STN 349	05/04/99	1.5	0.004	0.0025	0.16	ND	0.215	1.7	16.6	0.6	8.10	189	1.0	0.54	7.0	ND	0.6		
STN 349	07/13/99	1.5	0.006	ND	0.22	0.054	0.210	1.7	16.8	0.6	8.12	191	1.0	0.54	6.8	5	0.4		
STN 349	09/13/99	1.5	0.008	ND	0.18	0.018	0.180	1.7	17.2	1.6	8.18	172	ND	0.44	5.4	6	0.8		
STN 349	11/09/99	1.5	0.008	0.0030	0.16	0.028	0.218	1.3	15.2	1.6	8.04	185	3.0	0.69	6.0	6	0.8		
STN 349	05/04/99	9.7	0.012	0.0030	0.20	ND	0.220	1.6	16.2		8.15	189	2.0	0.91		4	0.8		
STN 349	07/13/99	10.5	0.004	ND	0.14	0.006	0.240	1.7	16.8		8.13	190	1.5	0.77		4	0.4		
STN 349	09/13/99	9.9	0.006	ND	0.20	0.034	0.185	2.1	17.4		8.09	174	1.0	0.68		5	0.8		
STN 349	11/09/99	10.0	0.006	0.0030	0.20	0.028	0.218	1.4	15.0		8.08	188	2.0	0.73		7	0.6		
STN 350	05/04/99	1.5	0.004	0.0025	0.20	0.006	0.215	3.0	16.2	0.6	8.15	185	0.5	0.58	5.8	9	0.4		
STN 350	07/13/99	1.5	0.004	ND	0.16	0.022	0.210	1.7	16.8	0.6	8.14	188	1.0	0.51	6.9	5	0.2		
STN 350	09/13/99	1.5	0.004	ND	0.14	0.014	0.182	1.7	16.8	1.6	8.17	173	0.5	0.47	6.4	6	0.6		
STN 350	11/09/99	1.5	0.008	0.0030	0.20	0.036	0.222	1.5	15.0	1.4	8.07	185	2.5	0.72	5.4	6	0.8		
STN 350	05/04/99	15.0	0.006	0.0020	0.20	ND	0.225	1.7	16		8.16	187	1.0	0.59		5	0.4		
STN 350	07/13/99	13.0	0.006	ND	0.14	0.004	0.255	1.6	17		8.09	190	1.0	0.87		4	0.4		
STN 350	09/13/99	13.0	0.008	ND	0.18	0.016	0.219	1.7	17.6		8.02	174	1.5	0.93		8	0.8		
STN 350	11/09/99	11.1	0.028	0.0030	0.24	0.048	0.219	1.4	15.2		8.02	185	2.0	0.84		6	1.0		
STN 351	05/04/99	1.5	0.004	0.0020	0.18	0.008	0.210	1.7	16.4	0.6	8.16	187	ND	0.50	6.9	5	0.6		
STN 351	07/13/99	1.5	ND	ND	0.12	0.004	0.215	1.7	16.8	0.6	8.19	188	0.5	0.51	5.8	2	ND		
STN 351	09/13/99	1.5	0.004	ND	0.14	0.012	0.180	1.7	16.8	1.6	8.23	174	ND	0.47	7.1	5	0.8		
STN 351	11/09/99	1.5	ND	0.0010	0.14	0.012	0.220	1.5	15.2	1.4	8.09	184	1.0	0.60	6.4	6	0.8		
STN 351	05/04/99	14.0	0.006	0.0020	0.20	0.008	0.220	1.7	16.2		8.18	187	1.0	0.65		ND	0.4		
STN 351	07/13/99	13.0	0.004	ND	0.08	ND	0.250	1.6	16.8		8.10	190	1.0	0.81		4	0.4		
STN 351	09/13/99	13.6	0.004	ND	0.16	0.014	0.232	1.6	16.2		8.06	178	1.5	0.89		5	0.8		
STN 351	11/09/99	12.8	ND	ND	0.16	0.010	0.218	1.4	15.6		8.07	185	1.0	0.65		8	0.8		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
STN 352	05/04/99	1.5	0.004	0.0020	0.18	0.004	0.210	1.7	16.2	0.6	8.19	188	ND	0.70	5.0	4	0.2		
STN 352	07/13/99	1.5	ND	ND	0.12	ND	0.205	1.6	16.6	0.6	8.14	187	1.0	0.46	6.6	2	ND		
STN 352	09/13/99	1.5	0.040	ND	0.24	0.012	0.178	1.7	16	1.4	8.16	177	1.0	0.43	7.4	10	0.8		
STN 352	11/09/99	1.5	ND	0.0020	0.14	0.010	0.217	1.4	15.6	1.4	8.09	186	1.0	0.58	5.8	4	1.0		
STN 352	05/04/99	9.8	0.006	0.0030	0.18	ND	0.220	1.6	16.4		8.19	189	1.0	0.65		2	0.4		
STN 352	07/13/99	11.1	0.004	ND	0.12	ND	0.240	1.5	17.2		8.10	189	1.0	0.80		6	0.4		
STN 352	09/13/99	9.9	0.004	ND	0.18	0.016	0.201	1.8	16.6		8.09	176	1.5	0.94		5	0.8		
STN 352	11/09/99	10.5	ND	0.0020	0.14	0.012	0.219	1.4	15.4		8.14	188	2.5	0.57		4	1.0		
STN 353	05/04/99	1.5	0.006	0.0020	0.16	ND	0.215	1.7	16.6	0.6	8.19	189	1.0	0.51	5.3	2	0.4		
STN 353	07/13/99	1.5	0.004	ND	0.12	ND	0.210	1.5	16.6	0.4	8.22	189	0.5	0.47	6.0	2	0.4		
STN 353B	07/13/99	1.5	0.004	ND	0.14	0.012	0.205	1.5	16.8		8.06	188	1.0	0.49		3	ND		
STN 353	05/04/99	15.5	0.006	0.0025	0.18	0.010	0.225	1.7	16.8		8.19	188	1.0	0.56		7	0.4		
STN 353	07/13/99	12.1	0.006	ND	0.12	0.006	0.245	1.4	17		8.14	192	1.0	0.77		2	0.4		
STN 353 B	07/13/99	8.8	0.004	ND	0.14	0.006	0.235	1.6	16.8		8.14	190	1.0	0.56		2	0.2		
STN 354	05/04/99	1.5	0.004	0.0025	0.18	ND	0.230	1.7	16.8	0.6	8.16	186	0.5	0.47	7.8	ND	0.6		
STN 354	07/13/99	1.5	0.004	ND	0.12	ND	0.215	1.6	16.8	0.6	8.17	190	0.5	0.48	6.7	ND	0.4		
STN 354	09/13/99	1.5	0.008	ND	0.16	0.008	0.192	1.7	16.6	1.6	8.22	176	1.0	0.41	6.8	10	0.8		
STN 354	11/09/99	1.5	0.004	0.0010	0.16	0.012	0.219	1.3	14.8		8.10	179	1.0	0.71		6	0.8		
STN 354	05/04/99	26.5	0.004	0.0025	0.16	0.004	0.245	1.6	16.8		8.12	187	1.0	0.57		5	0.4		
STN 354	07/13/99	27.7	0.008	ND	0.14	0.012	0.290	1.5	17.4		8.04	193	2.0	1.38		3	0.4		
STN 354	09/13/99	27.0	0.012	ND	0.16	0.012	0.295	1.5	17.4		7.88	179	1.0	0.89		7	0.6		
STN 354	11/09/99	26.9	0.008	0.0020	0.28	0.012	0.224	1.3	15.2		8.08	181	2.0	0.97		6	0.8		
STN 355	05/04/99	1.5	0.004	0.0025	0.16	ND	0.235	1.7	16.8	1.0	8.16	186	1.0	0.50	6.1	ND	0.4		
STN 355	07/13/99	1.5	0.004	ND	0.14	0.004	0.215	1.5	17	0.6	8.16	189	ND	0.43	6.3	2	0.2		
STN 355	09/13/99	1.5	0.008	0.0010	0.16	0.004	0.186	1.6	16.8	1.4	8.15	172	0.5	0.35	8.1	6	0.6		
STN 355	05/04/99	22.5	0.006	0.0025	0.20	0.004	0.235	1.7	16.8		8.06	188	1.0	0.56		3	0.4		
STN 355	07/13/99	22.3	0.008	ND	0.14	0.010	0.285	1.4	17.4		8.02	192	1.5	1.35		2	0.4		
STN 355	09/13/99	21.3	0.012	0.0010	0.20	0.012	0.274	1.5	17.4		7.89	176	1.0	0.74		3	0.8		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Buzwah 2000, Depth Integrated Samples																			
STN 350	04/19/00	14.9	0.004	ND	0.14	ND	0.216	1.4	16.0	1.4	8.13	182	0.5	0.41	8.2	4	0.8		
STN 351	04/19/00	13.4	0.006	ND	0.22	0.004	0.211	1.4	16.2	1.0	8.12	186	1.5	0.39	6.3	3	1.0		
STN 352	04/19/00	9.5	0.008	ND	0.14	0.004	0.206	1.4	16.2	1.8	8.11	189	1.0	0.40	8.8	5	0.4		
STN 353	04/19/00	7.7	0.004	ND	0.14	ND	0.217	1.4	16.0	1.2	8.08	179	1.0	0.41	7.2	6	0.8		
Buzwah 1999, Composite Samples																			
STN 349	04/27/99		0.006	0.0020	0.24	ND	0.220	1.7	16.8										
STN 349	05/31/99	8	0.004	0.0015	0.16	0.014	0.210	1.5	16.8		7.97	183	1.5					120	120
STN 349	07/26/99	8	0.010	ND	0.16	0.016	0.220	2.4	17.0		8.05	189	0.5		8.0			122	122
STN 349	09/28/99	8	0.014	0.0020	0.20	0.070	0.190	1.5	16.0		8.06	174	1.0		6.0			114	112
STN 350	04/27/99		0.004	0.0020	0.18	ND	0.220	1.5	17.0										
STN 350	07/26/99	1	0.018	ND	0.16	ND	0.225	2.2	16.0	ND	8.18	189	0.5		8.0		ND	124	124
STN 350	09/28/99	1	0.004	0.0010	0.18	0.046	0.184	1.6	16.4	1.2	8.10	171	0.5		6.1		0.6	112	112
STN 350	05/31/99	8	0.008	0.0010	0.20	0.010	0.215	1.6	16.8	1.0	7.98	184	1.5		4.0		1.0	122	120
STN 350	07/26/99	8	0.012	ND	0.16	0.016	0.230	2.4	16.2	0.4	8.12	189	0.5		8.0		ND	124	124
STN 350	09/28/99	8	0.008	0.0020	0.20	0.052	0.189	1.5	16.0	1.0	8.07	172	1.0		6.1		0.6	112	112
STN 351	04/27/99		0.004	0.0020	0.18	ND	0.235	1.5	17.2										
STN 351	05/31/99	8	0.004	0.0010	0.16	0.004	0.210	1.6	16.8		8.00	186	1.0					122	120
STN 351	07/26/99	8	0.020	ND	0.16	0.006	0.230	2.2	16.4		8.12	176	1.0		8.5			114	114
STN 351	09/28/99	8	ND	0.0010	0.14	0.012	0.185	1.6	16.0		8.14	171	0.5		6.5			112	112
STN 352	04/27/99		0.004	0.0025	0.18	ND	0.240	1.4	16.8										
STN 352	05/31/99	8	0.006	0.0010	0.16	0.006	0.210	1.7	16.8		7.98	184	1.0					122	120
STN 352	07/26/99	8	0.004	ND	ND	ND	0.220	2.3	16.2		8.13	179	1.0		8.0			116	116
STN 352	09/28/99	8	0.004	0.0010	0.14	0.016	0.175	1.7	15.8		8.16	171	1.0		7.0			112	112
STN 353	04/27/99		ND	0.0015	0.16	ND	0.250	1.5	16.4										
STN 355	05/31/99	8	0.008	0.0015	0.16	0.020	0.015	1.6	16.8	0.8	8.00	184	1.0		3.5		0.6	120	120
STN 355	07/26/99	8	0.012	ND	0.16	ND	0.220	1.9	16.8	ND	8.11	178	1.0		8.0		ND	116	116
FED 1	04/27/99		0.004	ND	0.18	ND	0.230	1.7	14.6										

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Buzwah 1999, Composite Samples																			
STN 6	09/28/99	1	0.006	0.0010	0.14	0.012	0.194	1.6	15.6	1.6	0.4	8.18	114		6.5		1.0	112	174
STN 6	05/31/99	8	0.004	0.0010	0.16	0.006	0.215	1.6	16.6	0.8	0.6	8.04	120		3.5		1.0	120	183
STN 6	07/26/99	8	0.006	ND	0.16	0.004	0.235	1.6	16.4	ND	ND	8.13	118		8.0		0.5	118	181
STN 6	09/28/99	8	0.012	0.0010	0.16	0.008	0.189	1.6	15.4	1.6	0.4	8.17	114		6.5		1.0	112	173
STN 7	09/28/99	1	0.004	0.0010	0.14	0.008	0.184	1.7	15.8	1.4	0.4	8.18	114		6.0		1.0	112	174
STN 7	05/31/99	8	0.004	0.0010	0.16	ND	0.215	1.6	17.0	0.8	0.6	8.00	122		3.3		1.5	120	183
STN 7	07/26/99	8	0.004	ND	0.16	ND	0.235	1.6	16.6	ND	ND	8.15	116		8.0		ND	116	179
STN 7	09/28/99	8	0.004	0.0010	0.12	0.012	0.185	1.7	15.4	1.6	0.6	8.16	116		6.0		1.0	116	177
Eagle Rock 1999, Grab Samples																			
STN 343	05/04/99	1.5	0.006	0.0025	0.18	ND	0.185	2.1	15.6	0.8	8.08	173	1	0.52	7.7	ND	0.4		
STN 343	07/12/99	1.5	0.012	ND	0.18	0.012	0.165	2	16.2	1	8.02	181	1	0.53	6.6	4	0.4		
STN 343	09/16/99	1.5	0.008	0.003	0.2	0.056	0.16	1.6	16.4	1.8	8.07	179	0.5	0.82	7.1	6	0.4		
STN 343	11/09/99	1.5	0.004	0.0020	0.16	0.018	0.184	1.5	15.2	2.0	8.17	187	2.0	0.62	6.6	4.00	0.8		
STN 343	05/04/99	15.0	0.006	0.002	0.18	ND	0.24	1.7	16.8		8.11	185	1.5	0.61		ND	0.4		
STN 343	07/12/99	16.7	0.012	ND	0.16	0.022	0.25	1.5	17		7.98	187	1.5	0.53		11	0.8		
STN 343	09/16/99	7.1	0.01	0.003	0.24	0.072	0.156	1.8	16.6		8.03	177	ND	1.13		6	0.6		
STN 343	11/09/99	15.0	0.004	0.0010	0.16	0.016	0.186	1.6	15.2		8.16	186	2.0	0.68		8.00	0.8		
STN 344	05/04/99	1.5	0.004	0.0015	0.18	ND	0.195	2	15.6	0.8	8.09	175	1	0.49	7.5	2	0.6		
STN 344	07/12/99	1.5	0.008	ND	0.18	0.014	0.17	1.7	16	0.8	8.02	181	1	0.46	6.7	4	0.6		
STN 344	09/16/99	1.5	0.004	0.003	0.12	0.018	0.158	1.7	16.2	1.6	8.14	179	0.5	0.71	8.7	7	0.2		
STN 344	11/09/99	1.5	0.004	0.0020	0.16	0.024	0.184	1.5	15.4	1.8	8.14	186	1.0	0.55	6.9	8.00	1.0		
STN 344	05/04/99	8.0	0.006	0.0015	0.22	ND	0.2	2	16		8.1	179	1.5	0.64		ND	0.6		
STN 344	07/12/99	9.0	0.008	ND	0.16	0.02	0.21	1.7	16.4		8.01	184	1	0.6		3	0.4		
STN 344	09/16/99	9.5	0.008	0.003	0.2	0.028	0.157	2.2	16.6		8.13	179	1	1.04		6	0.2		
STN 344	11/09/99	7.9	0.006	0.0020	0.20	0.036	0.183	1.5	15.2		8.11	186	1.5	0.70		5.00	1.0		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Eagle Rock 1999, Grab Samples																			
STN 345	05/04/99	1.5	0.004	0.002	0.18	ND	0.185	2.1	15.4	0.8	8.11	173	1	0.59	6.5	ND	0.4		
STN 345	07/12/99	1.5	0.006	ND	0.18	0.018	0.175	1.7	16.2	1	8.02	181	1	0.52		8	0.4		
STN 345	09/16/99	1.5	0.004	0.004	0.16	0.014	0.16	1.7	16.2	1.4	8.22	174	1	0.61	7.6	6	0.2		
STN 345	11/09/99	1.5	0.016	0.0080	0.24	0.072	0.188	1.5	15.0	2.0	7.93	176	1.0	0.70	7.2	5.00	1.0		
STN 345	05/04/99	16.5	0.008	0.0025	0.16	ND	0.235	1.7	17		8.12	187	1	0.61		ND	0.6		
STN 345	07/12/99	18.2	0.03	0.009	0.18	0.022	0.27	1.8	17.2		7.96	190	1.5	0.83		3	0.6		
STN 345	09/16/99	15.5	0.008	0.004	0.2	0.048	0.157	1.8	17.4		8.15	174	1	0.93		6	0.2		
STN 345	11/09/99	18.5	0.014	0.0070	0.24	0.080	0.185	1.5	15.2		7.93	180	2.5	0.67		5.00	1.0		
STN 346	05/04/99	1.5	0.004	0.002	0.2	ND	0.18	2.1	16	0.8	8.1	175	1	0.51	6.2	ND	0.6		
STN 346	07/12/99	1.5	0.008	ND	0.2	0.03	0.165	1.7	16.2	1	7.92	182	1	0.54	7.0	4	0.6		
STN 346	09/16/99	1.5	0.004	0.002	0.16	0.034	0.16	1.6	16.6	1.8	8.13	177	1	0.89	7.0	6	0.4		
STN 346	11/09/99	1.5	ND	0.0020	0.16	0.020	0.186	1.5	15.2	1.8	8.14	186	ND	0.50	6.8	10.00	1.0		
STN 346	05/04/99	22.5	0.006	0.0025	0.2	ND	0.245	1.7	16.8		8.03	186	1	0.64		ND	0.4		
STN 346	07/12/99	21.2	0.008	ND	0.16	0.012	0.275	1.5	17		7.94	188	1.5	0.78		2	0.6		
STN 346	09/16/99	7.0	0.004	0.003	0.12	0.008	0.284	1.5	17.6		7.88	181	1	1.35		11	ND		
STN 346	11/09/99	21.3	ND	0.0010	0.16	0.016	0.183	1.4	15.2		8.17	188	1.0	0.80		6.00	1.0		
STN 347	05/04/99	1.5	0.008	0.002	0.2	ND	0.19	2	15.6	0.8	8.1	174	1.5	0.56	6.9	2	0.6		
STN 347	07/12/99	1.5	0.004	ND	0.16	0.012	0.175	1.7	16.4	1	8.13	185	1	0.57	6.5	3	0.6		
STN 347B	07/12/99	1.5	0.006	ND	0.16	0.01	0.19	1.7	16.4		8.02	183	1	0.7	7.5	4	0.4		
STN 347C	07/12/99	1.5	0.004	ND	0.16	0.01	0.175	1.8	16.4		8.09	182	1	0.51	7.2	2	0.6		
STN 347	09/16/99	1.5	0.012	0.004	0.16	0.012	0.159	2	17	1.8	8.16	175	1	0.6		6	0.2		
STN 347	11/09/99	1.5	0.008	0.0030	0.18	0.036	0.185	1.5	15.2	2.0	8.02	180	1.0	0.64		5.00	1.0		
STN 347	05/04/99	28.5	0.046	0.002	0.34	ND	0.25	1.6	16.6		8.11	186	1.5	0.7		5	0.6		
STN 347	07/12/99	28.5	0.004	ND	0.14	0.008	0.27	1.4	17.2		8.02	189	1.5	1.13		6	0.6		
STN 347B	07/12/99	23.0	0.008	ND	0.16	0.008	0.275	1.7	17.6		7.98	188	1.5	0.94		5	0.4		
STN 347C	07/12/99	22.6	0.006	ND	0.16	0.008	0.27	1.6	17.2		8.02	189	1.5	0.84		4	0.4		
STN 347	09/16/99	18.6	0.004	0.004	0.12	0.008	0.3	1.4	17.6		7.95	178	1.5	1.11		5	ND		
STN 347	11/09/99	29.0	0.004	0.0030	0.16	0.014	0.187	1.8	14.8		8.05	177	6.5	0.67		9.00	1.0		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Eagle Rock 1999, Grab Samples																			
STN 348	05/04/99	1.5	0.004	0.002	0.18	ND	0.17	2.3	14.6	0.8	8.11	169	1	0.64	6.3	4	0.6		
STN 348	07/12/99	1.5	0.004	ND	0.16	ND	0.165	1.8	15.8	1	8.05	181	1.5	0.75	7.6	4	0.4		
STN 348	09/16/99	1.5	0.004	0.002	0.16	0.012	0.113	2.1	16.4	1.6	8.11	174	1.5	1.44	4.4	12	0.2		
STN 348	11/09/99	1.5	ND	0.0020	0.14	0.012	0.209	1.4	15.6	1.8	8.16	187	1.5	0.52	6.9	8.00	1.0		
STN 348	05/04/99	20.0	0.006	0.002	0.18	ND	0.245	1.7	16.4		8.11	186	2	0.77		ND	0.4		
STN 348	07/12/99	20.1	0.006	ND	0.14	0.006	0.255	1.6	16.8		8.04	189	1.5	0.85		6	0.6		
STN 348	09/16/99	20.0	0.004	0.001	0.14	0.012	0.241	1.6	17.4		7.91	181	1.5	0.96		10	ND		
STN 348	11/09/99	18.6	ND	0.0020	0.16	0.012	0.193	1.4	15.6		8.16	186	1.5	0.63		5.00	1.0		
Eagle Rock 2000, Depth Integrated Samples																			
STN 343	04/19/00	14.1	0.012	0.0010	0.18	0.018	0.200	1.4	15.0	1.6	8.09	180	1.0	0.36	8.3	0	0.8		
STN 344	04/19/00	9.2	0.008	0.0010	0.14	0.012	0.212	1.5	15.2	1.0	8.13	182	1.0	0.47	8.8	0	0.8		
STN 345	04/19/00	16.7	0.008	0.0010	0.18	0.018	0.205	1.5	15.0	1.8	8.09	180	1.0	0.46	9.2	0	0.8		
STN 346	04/19/00	21.9	0.008	0.0010	0.14	0.012	0.198	1.5	15.2	1.6	8.08	178	1.0	0.42	8.1	3	0.8		
Eagle Rock 1999, Composite Samples																			
STN 343	05/25/99	8	0.004	ND	0.20	0.016	0.210	1.8	16.4		8.16	184	1.5					122	120
STN 343	07/19/99	8	0.006	ND	0.18	0.030	0.155	1.8	16.6		8.01	183	0.5		6.5			120	120
STN 343	10/04/99	8	0.020	0.0030	0.24	0.056	0.205	1.5	15.4		7.97	174	1.0		6.0			114	112
STN 344	05/25/99	8	0.008	ND	0.20	0.022	0.205	1.8	16.8		8.08	183	1.5					120	120
STN 344	07/19/99	8	0.004	0.0010	0.16	0.016	0.160	1.6	16.8		7.98	183	1.0		7.0			120	120
STN 344	10/04/99	8	0.020	0.0030	0.24	0.054	0.207	2.0	17.0		7.99	172	1.0		5.5			114	112
STN 345	05/25/99	1	0.008	ND	0.24	0.042	0.195	1.7	16.6	1.0	8.09	183	1.5		5.0			120	120
STN 345	07/19/99	1	0.006	ND	0.16	0.010	0.130	1.8	16.8	0.4	8.01	180	0.5		7.0		0.4	118	116
STN 345	05/25/99	8	0.012	ND	0.24	0.044	0.210	1.7	16.6	1.6	8.07	184	1.5		5.0		0.8	122	120
STN 345	07/19/99	8	0.004	0.0010	0.16	0.024	0.155	1.7	16.8	0.6	7.98	183	0.5		7.0		0.4	120	120
STN 345	10/04/99	8	0.020	0.0030	0.24	0.064	0.203	1.8	17.4		7.98	174	1.5		6.0			114	112

Table D.1 Continued

Eagle Rock 1999, Composite Samples

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
STN 346	10/04/99	1	0.020	0.0030	0.32	0.110	0.210	1.5	16.2	1.6	7.89	176	1.0		6.0		0.8	116	114
STN 346	05/25/99	8	0.004	ND	0.16	0.010	0.210	1.7	16.4		8.16	184	1.5					122	120
STN 346	07/19/99	8	0.008	ND	0.18	0.026	0.155	1.6	16.8		8.04	182	0.5		7.0			118	118
STN 346	10/04/99	8	0.016	0.0020	0.24	0.068	0.206	1.4	16.0	1.8	7.98	176	1.0		6.0		0.6	114	114
STN 348	05/25/99	1	0.004	ND	0.18	0.006	0.180	1.8	15.6	1.0	8.18	179	1.0		4.1		0.8	118	116
STN 348	07/19/99	1	0.008	ND	0.16	0.010	0.135	1.9	16.8	0.4	8.09	181	1.0		7.8		0.4	118	118
STN 348	10/04/99	1	0.010	ND	0.12	ND	0.210	1.4	15.6	1.4	8.04	174	1.0		6.5		0.6	114	112
STN 348	05/25/99	8	0.004	ND	0.20	0.008	0.180	1.8	15.8	0.8	8.17	179	1.5		4.1		0.6	118	116
STN 348	07/19/99	8	0.006	ND	0.16	0.008	0.160	1.6	17.0	0.4	8.06	183	0.5		7.8		0.2	120	120
STN 348	10/04/99	8	0.016	ND	0.16	0.006	0.208	1.4	15.0	1.4	8.06	172	1.0		6.5		0.6	112	112
STN 6	05/25/99	1	0.004	ND	0.18	ND	0.190	1.8	16.4	1.2	8.17	181	1.5		4.6		1.0	120	118
STN 6	07/19/99	1	0.004	ND	0.14	0.008	0.135	1.8	16.4	0.4	8.17	184	0.5		7.0		0.2	120	120
STN 6	10/04/99	1	0.010	0.0010	0.16	0.008	0.205	1.5	15.6	1.4	8.04	172	1.0		6.8		0.6	112	112
STN 6	05/25/99	8	0.004	ND	0.20	0.008	0.195	1.6	16.2	1.0	8.17	181	1.5		4.6		0.6	120	118
STN 6	07/19/99	8	0.004	ND	0.16	0.004	0.160	1.6	16.8	0.4	8.13	184	0.5		7.0		0.4	120	120
STN 6	10/04/99	8	0.012	0.0010	0.16	0.008	0.205	1.4	15.4	1.6	8.06	173	1.0		6.8		0.6	112	112

Fisher Harbour 1999, Grab Samples

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
STN 356	05/07/99	1.5	0.008	0.0015	0.200	ND	0.215	1.9	16.2	1.0	8.12	176	ND	0.79	5.2	7	1.2		
STN 356	07/12/99	1.5	0.004	ND	0.160	0.008	0.210	1.7	16.4	0.6	8.07	184	1.0	0.46	7.4	4	0.4		
STN 356	09/15/99	1.5	0.008	ND	0.160	0.018	0.172	2.2	16.2	1.8	8.18	173	1.0	0.49	7.3	6	0.8		
STN 356	11/09/99	1.5	ND	0.0020	0.120	0.012	0.217	1.4	15.6	1.8	8.15	188	2.0	0.56	7.0	7	1.0		
STN 356	05/07/99	32.5	0.006	ND	0.160	0.018	0.290	1.5	16.8		7.97	188	1.5	0.81		3	0.4		
STN 356	07/12/99	33.1	ND	0.0020	0.140	0.016	0.193	1.8	15.4		8.16	185	1.5	0.58		6	1.0		
STN 356	11/09/99	33.3	0.004	ND	0.160	0.012	0.310	1.3	17.2		7.89	177	1.0	0.65		4	0.6		
STN 356	09/15/99	33.5	0.006	0.0015	0.240	ND	0.260	1.7	16.4		8.07	185	1.5	0.70		10	0.8		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Fisher Harbour 1999, Grab Samples																			
STN 357	05/07/99	1.5	0.006	0.0010	0.180	ND	0.225	1.7	16.2	1.0	8.10	181	1.0	0.53	5.7	7	0.8		
STN 357	07/12/99	1.5	0.012	ND	0.160	0.010	0.215	1.6	16.2	0.6	8.10	182	1.0	0.51		2	0.2		
STN 357	09/15/99	1.5	0.006	ND	0.160	0.020	0.165	1.7	16.8	1.8	8.17	174	1.0	0.57	7.4	6	0.6		
STN 357	11/09/99	1.5	0.008	0.0030	0.180	0.016	0.219	1.3	15.6	1.8	8.13	187	1.5	0.73	6.6	7	1.0		
STN 357	05/07/99	11.8	0.010	0.0010	0.240	ND	0.235	1.7	16.2		8.04	183	1.0	0.52		4	0.8		
STN 357	07/12/99	11.5	0.008	ND	0.160	0.010	0.235	1.6	16.4		7.99	186	1.0	0.66		2	0.4		
STN 357	09/15/99	13.0	0.004	ND	0.200	0.024	0.173	1.7	16.6		8.07	175	1.0	0.55		6	0.4		
STN 357	11/09/99	12.6	0.006	0.0030	0.180	0.022	0.216	1.5	15.6		8.12	186	4.5	0.82		4	1.0		
STN 358	05/07/99	1.5	0.006	0.0010	0.160	ND	0.225	1.7	16.2	1.0	8.12	181	1.0	0.54	6.0	5	0.8		
STN 358	07/12/99	1.5	0.004	ND	0.140	0.006	0.215	1.7	16.2	0.6	8.10	183	1.0	0.48		9	0.2		
STN 358	09/15/99	1.5	0.004	ND	0.160	0.024	0.163	2.2	17.4	2.0	8.09	175	1.0	0.57	8.0	8	0.6		
STN 358	11/09/99	1.5	0.004	0.0020	0.120	0.012	0.217	1.4	15.6	1.8	8.13	186	1.5	0.56	7.0	4	1.2		
STN 358	05/07/99	16.5	0.008	0.0010	0.160	ND	0.250	1.6	16.4		8.12	182	1.0	0.49		4	0.8		
STN 358	07/12/99	16.6	0.012	ND	0.140	0.012	0.250	1.5	17		8.01	186	1.5	0.67		2	0.4		
STN 358	09/15/99	16.5	0.008	ND	0.200	0.020	0.187	2.0	17		8.11	176	1.0	0.64		5	0.6		
STN 358	11/09/99	16.4	ND	0.0010	0.160	0.016	0.216	1.4	15.6		8.12	186	2.5	0.64		2	0.8		
STN 359	05/07/99	1.5	0.004	0.0010	0.180	ND	0.225	1.7	15.6	1.0	8.12	178	1.0	0.54	6.5	5	0.8		
STN 359	07/12/99	1.5	0.006	ND	0.180	0.008	0.210	1.7	16.4	0.8	8.08	183	1.5	0.54		3	0.4		
STN 359	09/15/99	1.5	0.014	ND	0.180	0.020	0.170	1.8	16.4	2.0	8.20	173	1.0	0.49	7.1	4	0.6		
STN 359	11/09/99	1.5	0.008	0.0030	0.180	0.028	0.215	1.4	15.8	1.8	8.11	192	2.0	0.62	7.9	3	1.0		
STN 359	05/07/99	16.5	0.012	0.0020	0.160	ND	0.250	1.6	16.2		8.08	183	1.0	0.55		7	1.0		
STN 359	07/12/99	15.1	0.008	ND	0.160	0.008	0.230	1.6	16.6		8.04	187	1.5	0.67		4	0.4		
STN 359	09/15/99	13.5	0.004	ND	0.080	0.016	0.186	1.7	16.8		8.15	175	1.0	0.84		5	0.4		
STN 359	11/09/99	14.7	ND	0.0020	0.160	0.018	0.207	1.4	15.4		8.13	188	1.0	0.68		3	1.0		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Fisher Harbour 1999, Grab Samples																			
STN 360	05/07/99	1.5	0.006	0.0010	0.160	ND	0.225	1.7	15.8	1.0	8.12	178	1.0	0.50	5.4	8	1.0		
STN 360	07/12/99	1.5	0.004	ND	0.140	0.008	0.215	1.6	16.4	0.8	8.09	184	1.0	0.52		2	0.2		
STN 360	09/15/99	1.5	0.014	ND	0.120	0.020	0.166	1.9	16.6	1.8	8.10	175	1.0	0.57	7.4	5	0.6		
STN 360	11/09/99	1.5	0.006	0.0030	0.160	0.032	0.208	1.5	15.8	2.0	8.12	186	1.5	0.59	8.2	3	0.8		
STN 360	05/07/99	16.5	0.008	0.0010	0.160	ND	0.245	1.6	16.4		8.10	183	1.0	0.60		6	0.8		
STN 360	07/12/99	16.6	0.004	ND	0.140	0.008	0.240	1.5	16.6		7.99	186	1.5	0.71		9	0.4		
STN 360	09/15/99	16.0	0.008	ND	0.220	0.016	0.191	1.6	17		8.04	176	1.5	0.58		4	0.4		
STN 360	11/09/99	17.1	ND	0.0020	0.160	0.016	0.209	1.4	15.2		8.13	188	2.0	0.60		5	1.0		
STN 361	05/07/99	1.5	0.004	0.0010	0.160	ND	0.245	1.6	16.4	1.0	8.13	184	1.0	0.52	6.7	5	0.8		
STN 361	07/12/99	1.5	0.004	ND	0.140	0.004	0.210	1.7	16.4		8.18	187	1.0	0.52	5.8	2	0.2		
STN 361B	07/12/99	1.5	0.004	ND	0.120	ND	0.205	1.7	16.4		8.15	186	1.0	0.43	7.0	6	ND		
STN 361C	07/12/99	1.5	0.004	ND	0.140	0.008	0.220	1.8	16.4	0.8	8.11	185	1.0	0.54	7.8	4	0.2		
STN 361	09/15/99	1.5	0.008	ND	0.160	0.012	0.172	2.1	17.2	1.8	8.18	176	0.5	0.51	7.5	5	0.8		
STN 361	11/09/99	1.5	0.010	0.0040	0.160	0.016	0.216	1.3	15.6	1.8	8.05	184	8.0	0.64	7.0	9	0.6		
STN 361	05/07/99	14.5	0.004	0.0010	0.160	ND	0.250	1.6	16.2		8.10	186	1.5	0.59		6	0.6		
STN 361	07/12/99	19.3	0.004	ND	0.120	0.006	0.275	1.6	17.2		8.09	192	1.0	0.77		5	0.4		
STN 361B	07/12/99	20.9	0.006	ND	0.120	0.006	0.270	1.6	17		8.03	189	1.0	0.76		6	0.4		
STN 361C	07/12/99	9.9	0.004	ND	0.160	0.004	0.210	1.6	16.4		8.07	186	1.0	0.54		4	0.2		
STN 361	09/15/99	19.0	0.008	ND	0.200	0.020	0.205	2.1	17.2		8.05	180	1.0	0.68		9	0.6		
STN 361	11/09/99	15.5	ND	0.0020	0.160	0.016	0.221	1.3	15.4		8.11	190	3.5	0.81		3	0.8		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Fisher Harbour 2000, Depth Integrated Samples																			
STN 357	04/19/00	9.9	0.008	ND	0.14	0.004	0.224	1.5	15.6	2.0	8.13	184	1.0	0.31	7.9	2	0.8		
STN 358	04/19/00	16.2	0.008	ND	0.18	0.004	0.219	1.4	15.6	1.8	8.14	184	1.5	0.32	9.0	2	0.6		
STN 359	04/19/00	14.6	0.010	0.0010	0.16	0.016	0.222	1.3	15.6	1.8	8.15	184	1.5	0.41	8.8	ND	1.2		
STN 360	04/19/00	15.5	0.008	ND	0.14	0.004	0.219	1.3	15.8	1.8	8.11	184	1.5	0.35	9.3	4	0.8		
Fisher Harbour 2000, Composite Samples																			
STN 357	05/25/99	8	0.004	ND	0.18	0.008	0.215	1.6	16.6		8.16	187	1.5					124	122
STN 357	07/19/00	8	0.008	ND	0.24	0.024	0.165	1.6	16.8		8.07	184	1.0		6.5			122	120
STN 357	10/04/99	8	0.012	0.0010	0.16	ND	0.205	1.5	15.4		8.17	174	1.0					114	112
STN 358	05/25/99	8	0.008	0.0015	0.24	0.042	0.215	1.6	16.6	0.8	8.16	186	1.5				0.6	122	120
STN 358	07/19/00	8	0.004	0.0010	0.20	0.014	0.175	1.6	16.6		8.08	184	1.0		6.8			120	120
STN 358	10/04/99	8	0.012	0.0010	0.16	0.004	0.212	1.5	15.8		8.15	172	0.5					112	112
STN 359	05/25/99	8	0.004	ND	0.18	0.008	0.215	1.5	16.2		8.16	185	1.0					122	120
STN 359	07/19/00	8	0.008	0.0010	0.20	0.038	0.175	1.6	17.0		7.98	185	1.5		6.3			122	120
STN 359	10/04/99	8	0.016	0.0010	0.18	0.020	0.210	1.5	16.2	1.2	8.13	172	1.0				0.6	112	112
STN 360	05/25/99	8	0.004	ND	0.16	0.004	0.215	1.7	16.6		8.16	185	1.0					122	120
STN 360	07/19/00	8	0.008	ND	0.18	0.026	0.170	1.7	17.0	0.6	8.02	184	ND		7		0.4	120	120
STN 360	10/04/99	8	0.016	0.0010	0.16	0.008	0.202	1.6	16.2		8.16	173	ND					112	112
STN 6	05/25/99	8	0.008	ND	0.20	ND	0.205	1.6	16.4	1.2	8.17	184	1.0		5.1		0.6	122	120
STN 6	07/19/00	8	0.008	0.0010	0.14	0.010	0.180	1.6	16.8	0.4	8.07	184	1.0		6.8		0.4	120	120
STN 6	10/04/99	8	0.012	ND	0.12	0.004	0.204	1.6	15.8	1.2	8.16	173	0.5				0.6	112	112
STN 356	05/25/99	8	0.006	ND	0.20	0.010	0.210	1.7	16.4	0.6	8.17	185	1.5		5.5		0.8	122	120
STN 356	07/19/00	8	0.004	ND	0.16	0.010	0.175	1.6	17.0	0.4	8.11	184	1.0		6.8		0.4	120	120
STN 356	10/04/99	8	0.010	ND	0.14	0.004	0.208	1.6	16.2	0.8	8.15	174	1.0				0.6	114	112

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Depot Harbour 1999, Grab Samples																			
STN 830	04/29/99	1.5	0.004	0.0015	0.16	ND	0.295	2.5	10.8	1.0	7.83	136	ND	0.22	12.5	8	0.8		
STN 830	07/16/99	1.5	0.004	0.0040	0.20	ND	0.210	2.5	12.4	1.0	7.96	148	1.0	0.34	5.6	3	0.4		
STN 830	09/10/99	1.5	0.006	0.0010	0.28	0.008	0.111	2.5	11.8	3.0	7.95	144	ND	0.41		9	0.4		
STN 830	11/11/99	1.5	ND	0.0010	0.18	0.012	0.242	2.5	10.4	1.8	7.84	144	0.5	0.41	8.7	6	0.8		
STN 830	04/29/99	22.3	0.008	0.0020	0.50	ND	0.290	2.3	11.0		7.68	138	1.0	0.23		6	2.2		
STN 830	07/16/99	31.0	0.004	0.0040	0.16	ND	0.290	2.3	11.4		7.83	138	1.0	0.37		8	0.4		
STN 830	09/10/99	31.0	0.004	0.0020	0.20	0.016	0.224	2.4	13.2		7.82	154	0.5	0.48		7	ND		
STN 830	11/11/99	34.0	ND	0.0020	0.18	0.012	0.242	2.1	10.2		7.86	142	1.0	0.38		6	0.8		
STN 831	04/29/99	1.5	0.008	0.0025	0.18	0.024	0.280	2.5	11.2	1.6	7.74	135	1.0	0.26	8.5	4	1.2		
STN 831	07/16/99	1.5	0.006	0.0035	0.20	0.004	0.205	2.5	11.6	1.4	7.98	144	1.0	0.43	5.9	4	0.4		
STN 831	09/10/99	1.5	0.006	0.0010	0.22	0.008	0.110	2.6	11.4	3.0	8.06	141	1.5	0.43	6.6	11	0.6		
STN 831	11/11/99	1.5	0.020	0.0030	0.36	0.118	0.229	2.4	10.6	3.6	7.87	143	2.0	0.48	6.9	6	1.0		
STN 831B	11/11/99	1.5	0.020	0.0060	0.36	0.116	0.230	2.8	10.4	3.4	7.89	144	1.0	0.51	6.5	6	0.8		
STN 831C	11/11/99	1.5	0.008	0.0020	0.24	0.048	0.231	2.4	10.0	3.0	7.80	142	0.5	0.47	6.7	7	0.8		
STN 831	04/29/99	9.0	0.022	0.0015	0.20	0.004	0.280	2.3	11.2		7.72	136	1.0	0.30		4	1.4		
STN 831	07/16/99	8.2	0.020	0.0045	0.30	0.036	0.205	2.6	11.6		7.96	144	1.5	0.71		4	0.6		
STN 831	09/10/99	8.0	0.004	0.0010	0.24	0.008	0.109	2.8	12.2		8.13	141	1.0	0.38		11	0.4		
STN 831	11/11/99	7.6	0.014	0.0070	0.30	0.092	0.226	2.4	10.0		7.93	143	0.5	0.50		8	0.8		
STN 831B	11/11/99	5.9	0.022	0.0060	0.36	0.118	0.224	2.6	10.4		7.88	146	1.0	0.55		8	0.8		
STN 831C	11/11/99	9.5	0.010	0.0020	0.28	0.062	0.231	2.3	10.4		7.94	143	1.0	0.51		6	0.8		
STN 832	04/29/99	1.5	0.012	0.0060	0.26	0.078	0.280	2.3	10.8	1.6	7.70	136	1.0	0.33	8.3	4	1.4		
STN 832	04/29/99	8.0	0.018	0.0080	0.28	0.058	0.275	2.7	11.2		7.70	137	1.0	0.56		4	1.6		
STN 833	04/29/99	1.5	0.008	0.0035	0.24	0.032	0.280	2.4	11.2	1.4	7.81	138	1.0	0.25	11.5	9	1.0		
STN 833	09/10/99	1.5	0.012	0.0060	0.24	0.010	0.116	2.6	12.2		8.15	146	1.5	0.34	6.3	10	0.6		
STN 833	04/29/99	30.5	0.004	0.0015	0.20	0.008	0.290	2.3	11.0		7.82	138	1.0	0.32		4	1.0		
STN 833	09/10/99	30.0	0.006	0.0010	0.22	0.040	0.224	2.6	12.0		8.00	148	1.0	0.34		8	0.2		

Table D.1 Continued

Station	Date	Depth	Total Phosphorus	Phosphate	Total Kjeldahl	Ammonia & Ammonium	Nitrate & Nitrite	Dissolved Organic Carbon	Dissolved Inorganic Carbon	Total Chlorophyll a	pH	Conductivity (uS/cm)	Suspended Solids	Turbidity (FTU)	Secchi Depth (m)	Chemical Oxygen Demand	Biochemical Oxygen Demand	Total Solids	Dissolved Solids
Depot Harbour 1999, Grab Samples																			
STN 834	04/29/99	1.5	0.006	0.0015	0.20	ND	0.290	2.5	10.6	1.2	7.75	136	0.5	0.23	10.2	4	1.0		
STN 834	07/16/99	1.5	0.004	0.0040	0.20	0.010	0.205	2.4	11.6	1.2	7.86	143	1.0	0.40	6.3	4	0.4		
STN 834	09/10/99	1.5	0.006	0.0010	0.20	0.004	0.114	2.6	12.0	2.6	8.10	144	1.0	0.37	5.5	13	0.6		
STN 834	11/11/99	1.5	ND	ND	0.16	0.016	0.233	2.3	10.4	1.6	7.97	143	ND	0.29		5	0.8		
STN 834	04/29/99	53.5	0.012	0.0015	0.20	0.006	0.285	2.4	11.0		7.84	136	0.5	0.41	9.0	4	1.6		
STN 834	07/16/99	45.6	0.004	0.0040	0.18	ND	0.290	2.3	11.6		7.85	138	0.5	0.26		2	0.4		
STN 834	09/10/99	45.0	0.004	0.0010	0.16	0.008	0.312	2.3	11.6		7.74	137	1.0	0.29		6	0.4		
STN 834	11/11/99	32.0	0.006	0.0010	0.24		0.234	2.4	10.2		7.99	142	0.5	0.29		7	0.6		
STN 835	07/16/99	1.5	0.008	0.0040	0.24	0.012	0.205	2.4	11.6	1.2	7.82	145	ND	0.41	6.2	4	0.4		
STN 835	09/10/99	1.5	0.012	0.0010	0.30	0.010	0.117	2.7	11.8	2.8	8.11	145	1.0	0.37	5.9	8	0.6		
STN 835	07/16/99	31.5	0.004	0.0040	0.16	ND	0.295	2.3	11.0		7.83	141	1.0	0.28		3	0.4		
STN 835	09/10/99	30.9	0.008	0.0010	0.28	0.012	0.118	2.7	12.0		8.13	145	1.0	0.38		11	0.4		
STN 836	07/16/99	1.5	0.004	0.0040	0.20	ND	0.210	2.5	13.2	1.2	7.98	146	1.0	0.37	5.3	5	0.4		
STN 836	09/10/99	1.5	0.016	0.0010	0.30	0.012	0.114	2.7	12.2	2.6	8.10	142	1.0	0.35	6.4	9	0.8		
STN 836	11/11/99	1.5	ND	0.0010	0.16	0.016	0.232	2.2	10.6	1.8	8.00	142	1.0	0.26		4	0.8		
STN 836	07/16/99	52.6	0.004	0.0040	0.16	ND	0.300	2.3	12.0		7.78	138	0.5	0.22		7	0.4		
STN 836	09/10/99	53.0	0.014	0.0010	0.20	ND	0.307	2.2	11.4		7.72	135	0.5	0.20		10	0.4		
STN 836	11/11/99	47.0	ND	0.0010	0.30	0.016	0.250	2.4	10.4		7.94	142	1.0	0.24		5	0.8		
STN 837	07/16/99	1.5	0.004	0.0040	0.20	ND	0.205	2.5	12.4	1.2	7.84	145	1.0	0.37	5.7	5	0.4		
STN 837	09/10/99	1.5	0.004	0.0010	0.24	0.008	0.118	2.6	12.0	2.4	8.10	144	1.0	0.33	6.7	8	0.6		
STN 837	07/16/99	52.6	0.004	0.0040	0.18	ND	0.300	2.3	12.2		7.80	138	1.0	0.23		2	0.4		
STN 837	09/10/99	60.0	0.014	0.0010	0.28	0.004	0.308	2.4	11.6		7.70	135	ND	0.23		6	0.2		